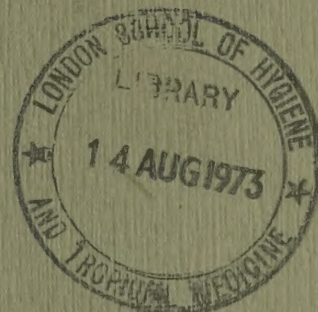


HC 49126
S
Rural District Council of Dartford



ON CERTAIN MATTERS
CONCERNING

Public Health

1968 - 1969

(PART II)

SANITARY CIRCUMSTANCES

Report for the years 1968-69 on certain
matters concerning Public Health

PART 2

The duties towards which this report contributes were outlined in the introduction in Part 1. There it was said that the report would be produced in two parts. This intention has now been expanded and the report will now be written in three parts, namely,

- 1 VITAL STATISTICS and COMMUNICABLE DISEASE
- 2 SANITARY CIRCUMSTANCES
- 3 COMMENTARY

Part 1 has already been submitted. Part 2 is submitted herewith.

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DARTFORD RURAL DISTRICT

TABLE XV CONJECTURE OF HOUSING NEED OF 1961 POPULATION

Immediate need 1961

Shared accommodation 1961 (census)

(Derived from Tables 11 and 13 of Kent Report and correspondence with the Registrar General)

Families
needing
rehousing

Households* sharing dwelling with one other household	102	51
" " " " two " "	12	8
" containing two or more families 490 say:		
" " two families	441	441
" " three "	49	<u>98</u>
Dwellings and sites required to relieve sharing	(say 600)	598

* A group benefiting from common housekeeping i.e. sharing a meal table

Replacement of dwellings

Unfit dwellings requiring demolition and replacement i.e. remainder of slum clearance programme (These will not require sites)		20
Dec. 1961 Total immediate need of dwellings	(say)	<u>620</u>

Annual recurrent need from 1961 onwards

Natural increase: Dwellings are required on marriage and are vacated at death. The dwellings required by those assuming independence but not marrying are balanced by those who do not marry but live as part of other households and by those who do not survive to marriage age. Thus the number of dwellings required each year is roughly half the annual number of births that occurred twenty years before less half the current annual number of deaths. When the number of such births equals the number of such deaths the population is stable and the number of dwellings required ceases to increase.

Migration: The above conjecture assumes that in regard to all population movement into and out of the Rural District immigration will be balanced by emigration.

Pertaining to 1961 population

Decade	Average annual number of births	Average annual number of deaths (outside long- stay hospitals)	Average annual number of dwellings required with sites
1942-51	600		
1952-61	750		
1962-71	1100	500	$600/2 - 500/2 = 50$
1972-81	1000	550	$750/2 - 550/2 = 100$
1982-91	900	650	$1100/2 - 650/2 = 225$
1992-01	800	700	$1000/2 - 700/2 = 150$
2002-11		750	$900/2 - 750/2 = 75$
2012-21		800	$800/2 - 800/2 = 0$
	Total births	Total deaths	
1942-01	5150 x 10		$(5150/2 - 3950/2) 10 = 600 \times 10$
1962-21		3950 x 10	

For the 1961 Dartford Rural District population outside long-stay hospitals after 6600 dwellings and sites have been provided and unfit houses have been replaced there will be equilibrium in the decades following year 2011.

Replacement of dwellings. After the demolition of unfit houses the remaining maintained houses should last indefinitely apart from catastrophies. However it would be expedient to assume that $\frac{1}{2}\%$ of houses will require replacement each year after the 80th year of being built. Sites will not be required for these dwellings. Conjecture on the necessary replacements is given in the accompanying table.

TABLE XV (continued) SUMMARY

Total need of 1961 population

Immediate

Annual recurrent

1962-71 1972-81 1982-91 1992-01 2002-11 2012-21

Dwellings and sites	600	50	100	225	150	75	0
Dwellings on available sites	<u>20</u>	16.5 say <u>17</u>	<u>20</u>	<u>23</u>	<u>25</u>	<u>85</u>	<u>225</u>
	620	67	120	248	175	160	225

Thus dwellings required in the eight years 1962-69 were $620 + 67 \times 8 = + 536 = 1156$ and as a substantial portion of the residential population hoped to be housed by the Council a similar portion of these 1156 dwellings needed to be Council owned.

TABLE XVI SHARED DWELLINGS 1961 CENSUS

Derived from Tables 11 and 13 of Kent report and correspondence with the R.G.

	Dartford Town*	Dartford R.R.D *	Northfleet U.D.	Swanscombe U.D.
(a) Existing dwellings shared:				
(i) dwellings with: two households	127	51	64	19
three "	11	4	9	2
(ii) households with: two families	297	441	171	54
three "	<u>33</u>	<u>49</u>	<u>19</u>	<u>6</u>
°. Dwellings shared assuming (i) does not include (ii)	468	545	263	81
(b) Total dwellings required where:				
dwellings have: two households	254	102	128	38
three "	33	12	27	6
households have: two families	594	882	342	108
three "	<u>99</u>	<u>147</u>	<u>57</u>	<u>18</u>
	980	1,143	554	170
°. Additional dwellings required to end sharing and provide one dwelling for each of all families i.e. (b)-(a)	512	598	291	89
Population 1961	43,460	51,260	22,380	8,910
Rate per 10,000 population	118	117	130	100

TABLE XVII COUNCIL DWELLINGS BUILT 1953-1969

	per 10,000 1953 population	as percentage of all dwellings built
*Dartford Town	514‰00	51%
*Dartford Residential Rural District	703‰00	23%
Northfleet Urban District	847‰00	45%
Swanscombe Urban District	734‰00	60%

* Denotes each district population less 2000 in long stay hospitals

[illegible]

Housing Provision in the 17 years 1953-1969

Table

Local Authority	Popu- lation mid 1953	Popu- lation mid 1970	17 years Population increase				Dwellings built 1953-69 Council enterprise				Dwellings put out of use for habitation					Increase in dwellings available		Increase in population mid 1953-mid 1970 per 100 additional dwellings available		
			Total mid 1953- mid 1970	Natural 1953-1969	Migration	Built	Boundary change 1957	Private enterprise	Boundary change 1957	Total	Unfit and demolished	L.A. for re- development	Hutments demolished	Prefabricated bungalows demolished	Total	Number	Per 10,000 1953 popu- lation			
Dartford Town	38430	44260	5830	5478	+352	1611	+486	1909	+1	4007	397	about 20	0	6	423	3584	935	153	+10	163
Dartford Residential Rural District	36610	63000	26390	8880	17510	2933 (367 by Borough)	-486	7524	-1	9970	306	about 30	16	71	423	9547	2610	93	+184	277
Northfleet Urban District	19280	25600	6320	3493	2827	1636	-	2010	-	3646	204	271	3	0	478	3142	1630	111	+90	201
Swanscombe Urban District	8614	9430	816	1067	-251	633	-	417	-	1050	75	8	38	100	221	829	960	129	-30	99
Cols.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Dartford Residential Rural area Dartford Town = Borough less 2000 persons in institutions
 " " = District " " "

ENVIRONMENTAL MATTERS

TABLE XX - HOUSING

NEW HOUSES: The following dwellings have been completed in the last five years:

	1964	1965	1966	1967	1968	1969
By Dartford Rural District Council	89	227	104	200	168	68
By private enterprise	<u>382</u>	<u>495</u>	<u>341</u>	<u>358</u>	<u>441</u>	<u>331</u>
	<u>471</u>	<u>722</u>	<u>445</u>	<u>558</u>	<u>609</u>	<u>399</u>

HOUSING PROVIDED BY COUNCIL:

Year Ending March	Applications received during year	Families rehoused during year	Applications cancelled during year	Effective list at end of year
1963	1485	170	14	1301
1964	1545	189	8	1348
1965	1562	238	22	1302
1966	1510	223	14	1273
1967	1577	253	80	1244
1968	1529	286	52	1191
1969	1472	221	26	1225
1970	1471	189	28	1254

LOCALITIES FROM WHENCE APPLICANTS REHOUSED:

	April-March 1967-68	April-March 1968-69	April-March 1969-70
Ash-cum-Ridley	1	2	3
Fawkham	4	2	1
Hartley	2	3	3
West Kingsdown	23	32	8
Longfield	11	8	6
Southfleet	4	7	8
Betsham	1	-	3
Bean	3	1	6
Darenth	12	16	17
Stone	38	27	15
Eynsford	5	4	6
Farningham	5	3	5
Horton Kirby	7	4	3
South Darenth	3	5	-
Sutton-at-Hone	6	5	2
Swanley	55	38	40
Crockenhill	12	7	13
Hextable	11	2	9
Wilmington	10	8	13
Hawley	5	3	1
Outside Rural District	<u>68</u>	<u>44</u>	<u>27</u>
	<u>286</u>	<u>221</u>	<u>189</u>

During the above three years 249, 279 and 222 Council tenants were transferred to accommodation more suited to their requirements.

The dwellings required for tenants of unfit houses were 14, 7 and 15.

The engaged couples applying for tenancies were 116, 116 and 122.

TABLE XX - HOUSING (continued)

HOUSES DEMOLISHED - HOUSING ACT, 1957

	1968	1969
In Clearance Areas (Housing Act, 1957)		
Houses unfit	12	18
Not in Clearance Areas:		
As a result of action under Section 17	6	4
Unfit houses closed:		
Under Sections 16 and 17 etc.	Nil	7
Parts of buildings closed under Section 18	Nil	Nil

ADDRESSES OF HOUSES DEMOLISHED OR CLOSED:

1968	1969
Crowsland, St. Clere Hill Rd. W. Kingsdown	1-8, Elm Terrace, Longfield
1-8, Bath Cottages, London Road, Swanley	131-141 (odd) High Road, Wilmington
1-4, Bank Houses, Hawley Road, Hawley	1-4, Ivy Cottages, Main Road, Longfield
Eldridge, New Road, Idleigh	Clearways Garage Bungalow, W. Kingsdown
1-2, Hulberry Farm Cottages, Hulberry	Oakfield Cottage, Hartley
1-2, New House Farm Cottages, Hartley	Sundown, Castle Hill, Fawkham
	50, Main Road, Sutton-at-Hone
	2, Walnut Tree Avenue, Wilmington
	Shed, Gorsewood Road, Hartley
	3, Anthony Lane, Swanley Village
	5, 7, 8, 11, Lincoln Terrace, Darenth

	1968	1969
Number of visits paid by Council's Public Health Inspectors	85	221

DEMOLITION AND CLOSING ORDERS MADE:

	1968	1969
Number of demolition orders issued	2	4
Number of closing orders issued	Nil	2
Number of undertakings not to be used for habitation	Nil	2

PERSONS DISPLACED:

	1968		1969	
	Persons	Families	Persons	Families
In Clearance Areas:				
Houses unfit	36	16	3	3
Not in Clearance Areas:				
As a result of action under Section 17	7	5	18	8

CARAVANS:

	1968	1969
The number of sites licensed under the Act for more than individual caravans	29	24
The total number of caravans permitted on licensed sites	427	394
Visits paid by the Council's Public Health Inspectors	91	104

TABLE XX - HOUSING (continued)

IMPROVEMENT GRANTS APPLIED FOR:

	1968	1969
Applications for discretionary grants	3	12
Number of houses	3	12
Applications for standard grants	72	65
Number of houses	72	65
Total cost of discretionary grants approved	£990	£10,538
Total cost of standard grants approved	£16,004	£16,983

IMPROVEMENT GRANT WORK COMPLETED:

Standard grants	£19,383 (88 houses)	£15,722 (64 houses)
Discretionary grants	1 £400	Nil

UNFIT HOUSES MADE FIT:

	By Owner		By Local Authority	
	1968	1969	1968	1969
After informal action by local authority	59	48	-	-
After formal notice under (a)Public Health Acts	6	38	-	-
(b)Section 24	2	Nil	-	-
Housing Act 1957				
Sec.27 "	-	2	-	-

Total number of visits paid by Council's Public Health Inspectors 1133 1076

REPAIRS:

The following are the details of repairs initiated by the Council's Public Health Inspectors:

	1968	1969
Complaints received	391	286
Water pipes repaired	-	1
Yard paving repaired	4	1
Floors repaired	14	13
Roofs repaired, overhauled and made waterproof	20	24
Wallplaster and ceiling plaster repaired	36	32
Windows repaired including sash cords	18	15
Rainwater pipes and gutters repaired or renewed	19	17
Dampness abated	33	39
External rendering to walls and pointing	2	16
Chimney stacks and pots	7	3
Sub-floor ventilation improved	-	-
New sinks provided	-	-
Flushing cisterns renewed or repaired	3	6
Water closet pans renewed	3	3
Houses provided with new dustbins	1	-
Other defects	35	17
Visits paid by the Council's Public Health Inspectors	2194	1412

RENT ACT 1957:

The following certificates received and issued for disrepair Nil Nil

TABLE XXI IMPROVEMENT GRANTS

RATES PER THOUSAND HOUSES WITHOUT FIXED BATH AT 1961 CENSUS
cumulative

Year	Standard grants	o/oo Houses no bath	Expend. £000	o/oo Houses no bath	Discret. grants	o/oo Houses no bath	Expend. £000	o/oo Houses no bath
<u>Dartford R.D.</u>								
1961	32	13 ⁰ /oo	3	1.2 ⁰ /oo	160	63 ⁰ /oo	36	14.2 ⁰ /oo
1962	74	29 ⁰ /oo	8	3.1 "	227	89 "	41	16.1 "
1963	122	48 ⁰ /oo	15	5.9 "	227	89 "	41	16.1 "
1964	1180	71 ⁰ /oo	22	8.6 "	229	90 "	41	16.1 "
1965	257	101 ⁰ /oo	31	12.3 "	242	95 "	43	16.9 "
1966	304	119 ⁰ /oo	42	16.5 "	243	95 "	44	17.5 "
1967	378	148 ⁰ /oo	57	22.4 "	243	95 "	44	17.5 "
1968	460	181 ⁰ /oo	75	29.4 "	243	95 "	44	17.5 "
1969	557	219 ⁰ /oo	96	37.7 "	245	96 "	45	17.7 "
1970	600	236 ⁰ /oo	107	42.0 "	246	97 "	45	17.7 "
1971	666	262 ⁰ /oo	124	47.9 "	278	109 "	63	24.7 "

Dartford M.B.

1961	25	14 ⁰ /oo	2	1.1 ⁰ /oo	82	46 ⁰ /oo	15	8.4 ⁰ /oo
1962	43	24 "	4	2.2 "	100	56 "	19	10.6 "
1963	59	33 "	6	3.4 "	121	68 "	24	13.4 "
1964	85	48 "	9	5.0 "	143	80 "	30	16.8 "
1965	106	59 "	11	6.2 "	164	91 "	38	21.3 "
1966	123	69 "	14	7.8 "	179	100 "	42	23.5 "
1967	147	82 "	17	9.5 "	204	115 "	52	28.1 "
1968	173	97 "	20	11.2 "	214	120 "	61	34.2 "
1969	213	119 "	28	15.7 "	219	123 "	64	35.9 "
1970	249	140 "	36	20.2 "	225	126 "	66	37.0 "
1971	300	168 "	44	24.6 "	232	130 "	68	38.0 "

Northfleet U.D.

1961	15	10	1	0.1 ⁰ /oo	94	58 ⁰ /oo	17	10.5 ⁰ /oo
1962	27	16	1	0.1 "	119	73 "	21	12.9 "
1963	35	22	2	1.3 "	130	80 "	27	16.6 "
1964	42	26	3	1.9 "	146	90 "	31	19.1 "
1965	57	35	6	3.7 "	179	110 "	40	24.6 "
1966	76	47	8	4.9 "	210	129 "	47	28.9 "
1967	90	55	9	5.5 "	236	145 "	55	33.8 "
1968	103	63	11	6.8 "	269	166 "	66	40.6 "
1969	127	78	14	8.6 "	293	180 "	74	45.5 "
1970	151	93	16	9.9 "	312	194 "	80	49.2 "
1971	183	112	22	13.5 "	338	208 "	94	57.8 "

Swanscombe U.D.

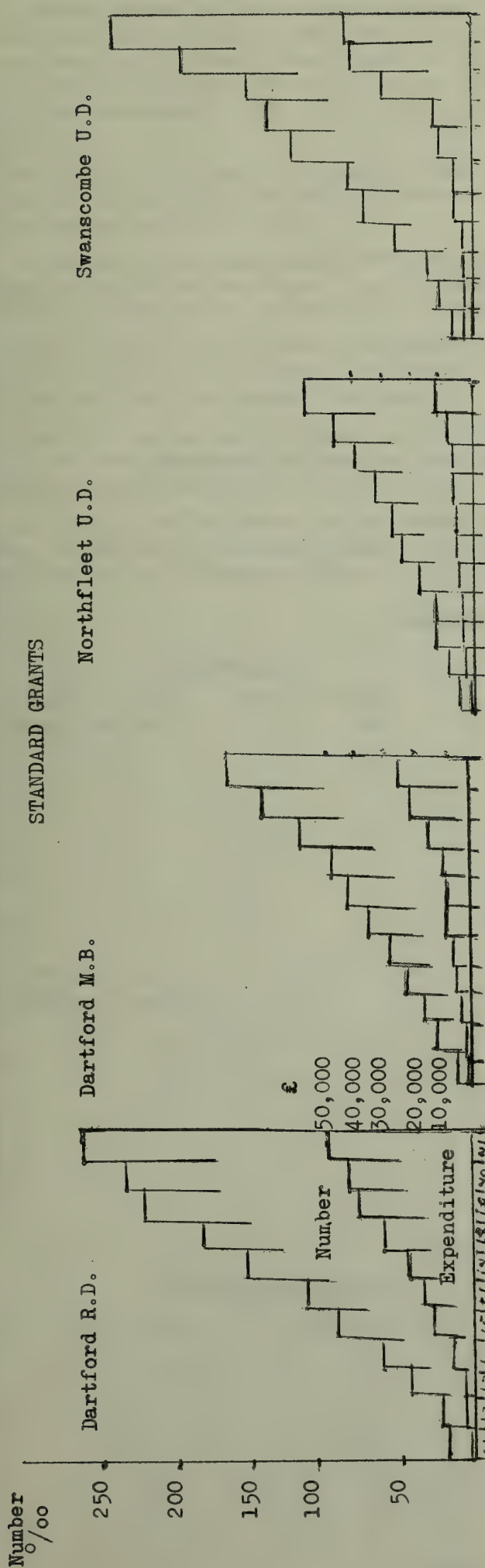
1961	11	15 ⁰ /oo	1	1.3 ⁰ /oo	44	58 ⁰ /oo	8	10.5 ⁰ /oo
1962	18	24 "	1	1.3 "	56	74 "	11	14.5 "
1963	25	33 "	2	2.6 "	64	84 "	13	17.1 "
1964	39	51 "	3	3.9 "	79	104 "	17	22.4 "
1965	57	75 "	5	6.6 "	88	116 "	19	25.0 "
1966	65	86 "	6	7.9 "	97	128 "	22	29.0 "
1967	93	123 "	11	14.5 "	102	134 "	23	30.1 "
1968	105	138 "	14	18.4 "	110	145 "	26	34.2 "
1969	119	157 "	23	30.3 "	116	153 "	29	38.2 "
1970	149	197 "	31	40.8 "	122	161 "	29	38.2 "
1971	183	241 "	34	44.7 "	129	170 "	33	43.4 "

HOUSES WITHOUT FIXED BATH 1961

Dartford R.D. 2542
Dartford M.B. 1783Northfleet U.D. 1626
Swanscombe U.D. 760

IMPROVEMENT GRANTS

NUMBER AND EXPENDITURE PER THOUSAND HOUSES WITHOUT FIXED BATH AT 1961 CENSUS



DISCRETIONARY GRANTS

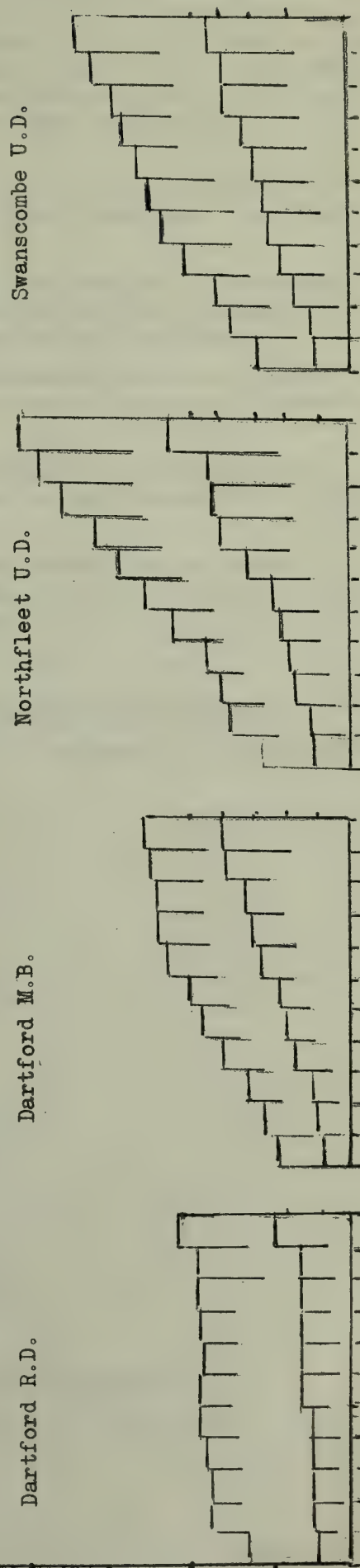


TABLE XXII - HOUSING (continued)
PRIORITY FOR REHOUSING ON HEALTH GROUNDS

When a medical practitioner has decided that priority on health grounds is justified he writes to the medical officer of health direct. After receiving a letter regarding priority from the applicant's doctor the M.O.H. consults the Housing Welfare Department then sends to the housing welfare officer his assessment of the appropriate priority. He provides the applicant's doctor with a copy of his assessment. The latter is also informed when the applicant is rehoused.

The M.O.H. is given 10 points with which to express medical priority, 5 are used to express need on personal health grounds and 5 are used to express need on public health grounds.

Personal health need takes into consideration the prospect of rehousing helping the applicant to adapt to some disability or helping him towards recovery or helping his relatives or himself in nursing or managing his illness.

Public health need formerly concerned cases of tuberculosis and related to the infectiousness of the case. In certain cases recently it has also concerned e.g., the emotional environment of children.

Matters such as overcrowding and shared accommodation are left to non-medical routine assessment of need and are generally regarded as matters on which the housing department requires no guidance.

On rare occasions when the above methods of assessment do not appear to express the needs of the case a special approach can be made to the committee asking them to give consideration to a special need.

ASSESSMENTS

<u>Tuberculosis</u>				<u>Other than Tuberculosis</u>			
No. of applications for Council accom.		No. of points		No. of applications		No. of points	
		0	1-5			0	1-5
1962	3	-	3	64	22	42	
1963	6	-	6	78	20	50	
1964	6	-	4	70	16	54	
1965	4	-	4	67	15	52	
1966	2	-	2	59	14	45	
1967	1	-	1	90	20	70	
1968	1	-	1	68	21	47	
1969	-	-	-	80	25	55	
Apps. for transfers from Council tenants							
1962	-	-	-	11	4	7	
1963	-	-	-	20	3	17	
1964	-	-	-	21	2	19	
1965	-	-	-	20	4	16	
1966	1	-	1	19	5	14	
1967	-	-	-	49	6	43	
1968	-	-	-	18	8	10	
1969	-	-	-	27	10	17	

REHOUSED

<u>Number transferred</u>				<u>Number rehoused</u>			
Tuberculous		Non-tuberculous		Tuberculous		Non-tuberculous	
1962	-	-	-	1	24		
1963	-	-	-	3	47		
1964	-	-	-	2	53		
1965	-	-	-	3	71		
1966	-	19	-	1	65		
1967	-	30	-	1	70		
1968	-	36	-	1	58		
1969	-	20	-	-	54		

YABLE XXIII - WATER

GATHERING GROUND. The chalk below this district is part of the gathering ground for the N.W.Kent. The wells of the Metropolitan Water Board, Mid Kent Water Company and the Medway Water Board draw water from this chalk to supply this and neighbouring districts. The Lullingstone estate has a small supply of its own. One hospital has its own supply which is supplemented if necessary with Metropolitan Water Board water. Certain factories have their own wells, mainly for industrial purposes.

ACCESSIBILITY OF SUPPLY. With two exceptions all dwellings have water piped into them from these sources and the quantity in 1968 and 1969 was abundant.

QUALITY. Apart from the two dwellings on their own domestic supplies the quality of water supplied was excellent.

SOURCES OF SUPPLY AND ACCESSIBILITY

Piped supplies into houses. The position at the end of 1969 was as follows:

The Medway Water Board does not serve this district.

The Metropolitan Water Board serve the following Parishes:

Darenth	Farningham	Stone
Crockenhill	Horton Kirby	Sutton-at-Hone
Eynsford	Southfleet	Swanley
		Wilmington

The Mid Kent Water Company serve the following Parishes:

Ash	Fawkham	Hartley
Longfield	Southfleet	West Kingsdown

Lullingstone Estate supply	Eynsford	serves 65 houses
Darenth Park Hospital	Darenth	" 8 "
Barn End Laundry well	Wilmington	" 1 house

Supplies not piped into houses

Domestic well	Sutton-at-Hone	1 house
Rainwater tank	West Kingsdown	1 house

Piped supplies into hospitals

Stone House Hospital	Metropolitan Water Board
Darenth Park and Mabledon Hospital	Hospital well with M.W.B. as reserve supply

Industries with well supplies

1) For industrial use and for human consumption:

Dartford Trading Estate	Wilmington
Vickers Roneo Ltd	Wilmington
Wooster & Steele	Hawley Road, Hawley

2) For industrial use only:

Darenth Fabric Printing Works	Darenth
Vulcanized Fibre Co.	Eynsford
A.P.C.M. Johnson Works	Stone
A.P.C.M. Kent Works	Stone
Horton Kirby Paper Mills	Horton Kirby

TABLE XXIII WATER - (continued)

QUALITY (continued)

Sampling by Hospitals

		1968		1969	
		No. of samples	E.coli 1 per 100 ml.	No. of samples	E.coli 1 per 100 ml.
Darenth Park and	Raw water	50	None	45	1
Mapledon Hospital	Treated water	50	None	45	None

Sampling by Council's Public Health Inspectors

Lullingstone	Treated water	3	0	3	0
Ayres Nursery Well	Clement Street	1	0	-	-
Dartford Industrial Trading		1	2	-	-
Estate - well		3	0	-	-
Wooster & Steele -well		1	0	-	-
Hawley Paper Mills - well		-	-	-	-
" " " - river		-	-	1	180+
Two domestic premises (Mid K.W.Co)		-	-	2	0
(Parish of Longfield)					

TABLE XXIV SWIMMING POOLS

In 1966 there were three private enterprise swimming pools in the district open to the public and two swimming pools at two schools. In 1967 the Council's swimming pool at White Oak was opened.

All the swimming pools in the district are provided with continuous circulation filtration and chlorination. With continuous circulation, filtration and chlorination, the bacteriological standard aimed at is, that no sample should contain any coliforms in 100 ml of water; that in 75 per cent of the samples, the plate count should not exceed 10 colonies and that in the remainder the count should not exceed 100 colonies.

Attendances at the White Oak pool were:-

	<u>1968</u>	<u>1969</u>
January	20877	26968
February	24576	21071
March	27430	27932
April	36945	41818
May	34120	44616
June	43227	45329
July	46744	60102
August	52635	57239
September	39844	40105
October	36272	37655
November	27380	28866
December	<u>15639</u>	<u>14544</u>
	<u>405689</u>	<u>446245</u>

Chlorine & pH estimations
of individual samples

	<u>1968</u>		<u>1969</u>	
	Chlorine	pH	Chlorine	pH
	p.p.m		p.p.m	
1st qr.	2.0	7.9	2.5	7.9
	1.8	7.7	2.8	7.8
2nd qr.	2.5	7.8	2.3	7.9
	1.5	8.0	2.3	7.8
3rd qr.	2.5	7.9	3.0	7.8
	1.8	7.8	1.8	7.8
			2.0	7.8
4th qr	2.0	7.9	2.0	7.8
	2.5	7.8	2.0	7.8
	2.3	7.9		

TABLE XXVI - WATER (continued)

QUALITY (continued)

Swimming Pools (continued)Sampling Results

Source		Probable numbers per 100 ml.				Plate count per ml.	
		Coliforms		E.coli among coliforms		24 hr. 37°C	
		1968	1969	1968	1969	1968	1969
Manor House	Shallow end	0	0			1	0
	Deep end	0	2 or more		1	0	11
	Shallow end		0				0
	Deep end		0				0
Woodlands	Shallow end	0	0			2	0
	Deep end	0	0			0	0
	Shallow end	0	0			0	25
	Deep end	0	0			1	200
Stanwell	Shallow end	0	0			0	2
	Deep end	0	0			0	2 or more
	Shallow end		0				uncountable
	Deep end		0				"
Hextable Special School	Shallow end	0	0			0	0
	Deep end	0	0			0	9
	Shallow end	0	0			0	0
	Deep end	0	0			0	2
	Shallow end	0	0			0	0
	Deep end	0	0			0	0
	Shallow end	0	0			0	0
	Deep end	0	0			0	0
	Shallow end		0				0
	Deep end		0				0
	Shallow end		0				0
	Deep end		0				0
	Shallow end		0				0
	Deep end		0				0
	Shallow end		0				0
	Deep end		0				0
Longfield Primary School	Shallow end	0				0	
	Deep end	0				0	
	Shallow end	0					0
White Oak	Shallow end	0	0			0	2
	Deep end	0	0			0	0
	Teaching pool	0				0	
	Shallow end	0	0			0	0
	Deep end	0	0			0	0
	Teaching pool	0	0			0	0
	Shallow end	0	0			0	2
	Deep end	0	0			0	
	Teaching pool	0	0			0	5
	Shallow end	0	0			0	9
	Deep end	0	0			0	12
	Teaching pool	0	0			2	16
	Shallow end	0	0			0	0
	Deep end	0	0			0	0
	Teaching pool	0	0			0	0
	Shallow end	0	0			0	0
	Deep end	0	0			0	0
	Teaching pool	0	0			0	0
	Shallow end	0	0			0	0
	Deep end	0	0			0	0
	Teaching pool	0	0			0	0

TABLE XXV - WATER (continued)

QUALITY
Bacteriological Analyses -1968
Sampling by Water Undertakers

<u>Metropolitan Water Board</u>	<u>No. of samples</u>	<u>E coli in 100 ml.</u>
Raw water	2188	see table
Treated water	1970	none

RAW WATER Yearly averages

Well	No. of samples	Plate count per ml.		Coliform count		Escherichia coli count	
		20-24 hours at 37°C	3 days at 22°C	% samples negative in 100 ml.	Count per 100 ml.	% samples negative in 100 ml.	Count per 100 ml.
Darenth	246	0.1	18	97.15	0.1	97.97	0.1
Dartford	221	0.1	21	100.0	-	100.0	-
Eynsford No.1	179	0.0	32	88.88	-	99.44	-
Eynsford No.2	158	0.0	6	98.73	-	100.0	-
Horton Kirby No.1	189	0.2	231	84.66	1.0	87.83	1.0
Horton Kirby No.2	216	0.4	32	89.35	1.1	92.13	1.1
Green St.Green No.1	199	0.1	5	93.47	0.6	94.47	0.6
Green St.Green No.2	48	0.0	1	89.58	0.5	93.75	0.5
Lullingstone No.1	128	0.1	1	100.0	-	100.0	-
Lullingstone No.2	123	0.1	12	99.19	-	99.19	-
Southfleet	241	0.1	95	98.76	-	99.17	-
Wilmington	250	1.8	47	89.58	0.1	94.58	0.1

<u>Medway Water Board</u>	<u>No. of samples</u>	<u>E.coli in 100 ml.</u>
Raw water	87	see table
Treated water	87	none

RAW WATER Fawkham Pumping Station

Probable No. per 100 ml.	None	1-9	10-19	20-29	30-39	40-49	50-89	90-100	100+	Samples
Coliform	60	18	4	1	2	none	none	none	2	87
E.Coli type 1	64	15	3	3	none	none	none	none	2	

<u>Mid Kent Water Company</u>	<u>No. of samples</u>	<u>E.coli in 100 ml.</u>
Raw water	65	see table
Treated water	134	none

RAW WATER Hartley Pumping Station

Probable No. per 100 ml.	None	1-9	10-19	20-29	30-39	40-49	50-89	90-100	100+	Samples
Coliform	48	5	none	none	none	none	none	none	none	53
E coli type 1	50	3	none	none	none	none	none	none	none	

RAW WATER Stansted Pumping Station

Probable No. per 100 ml.	None	1-9	10-19	20-29	30-39	40-49	50-89	90-100	100+	Samples
Coliform	1	4	2	none	none	none	1	3	1	12
E coli type 1	4	2	2	none	none	none	1	2	1	

TABLE XXVI - WATER (continued)

QUALITY
Bacteriological Analyses - 1969
Sampling by Water Undertakers

<u>Metropolitan Water Board</u>	<u>No. of samples</u>	<u>E coli in 100 ml</u>
Raw water	2266	see table
Treated water	1987	none

RAW WATER Yearly averages

Well	No. of samples	Plate Count per ml.		Coliform count		Escherichia coli count	
		20-24 hours at 37°C	3 days at 22° C	% samples negative in 100 ml.	Count per 100 ml.	% samples negative in 100 ml.	Count per 100 ml.
Darenth	250	0.1	13	100.0	-	100.0	-
Dartford	245	0.4	4	100.0	-	100.0	-
Eynsford No.1	169	0.2	30	99.41	-	100.0	-
Eynsford No.2	174	0.1	4	99.43	-	99.43	-
Horton Kirby No.1	196	0.2	73	91.84	0.4	94.90	-
Horton Kirby No.2	199	0.1	15	94.47	0.2	96.48	0.3
Green St.Green No.1	168	0.1	3	94.05	0.1	97.62	0.1
Green St.Green No.2	82	0.1	2	97.56	0.1	98.78	--
Lullingstone No.1	166	0.1	2	99.40	-	99.40	-
Lullingstone No.2	138	0.1	1	99.28	-	100.0	-
Southfleet	241	0.1	24	98.76	-	100.0	-
Wilmington	238	0.5	46	98.74	-	99.58	-

<u>Medway Water Board</u>	<u>No. of samples</u>	<u>E coli in 100 ml.</u>
Raw water	98	see table
Treated water	98	none

RAW WATER Fawkham Pumping Station

Probable No. per 100 ml.	None	1-9	10-19	20-29	30-39	40-49	50-89	90-100	100+	Samples
Coliform	71	27	none	none	none	none	none	none	none	98
E coli type 1	82	16	none	none	none	none	none	none	none	

<u>Mid Kent Water Company</u>	<u>No. of samples</u>	<u>E coli in 100 ml.</u>
Raw water	72	see table
Treated water	138	none

RAW WATER Hartley Pumping Station

Probable No. per 100 ml.	None	1-9	10-19	20-29	30-39	40-49	50-89	90-100	100+	Samples
Coliform	61	2	none	none	none	none	none	none	none	63
E coli type 1	62	1	none	none	none	none	none	none	none	

RAW WATER Stansted Pumping Station

Probable No. per 100 ml.	None	1-9	10-19	20-29	30-39	40-49	50-89	90-100	100+	Samples
Coliform	6	3	none	none	none	none	none	none	none	9
E coli type 1	7	2	none	none	none	none	none	none	none	

Milligrammes per litre, average results

1968

Well	No. of samples	Ammonia Nitrogen	Albuminoid Nitrogen	Nitrate Nitrogen	Oxygen absorbed in 4 hrs at 27°C	Hardness Total	Hardness (non-carb)	Chlorides as Chlorine	pH	Natural Fluoride as Fluorine	Conductivity reciprocal megohms
<u>Met. Water Board</u>											
Darenth	4	0.009	0.025	4.6	0.12	272	46	18	7.3	0.15	500
Dartford	4	0.007	0.024	4.2	0.15	275	53	21	7.2	0.15	520
Eynsford	8	0.003	0.026	3.8	0.10	268	44	18	7.3	0.15	470
Green St. Green	8	0.008	0.025	5.9	0.09	283	44	19	7.3	0.10	530
Horton Kirby	8	0.009	0.023	3.8	0.10	271	50	19	7.3	0.15	490
Lullingstone	8	0.009	0.023	3.6	0.09	258	37	16	7.3	0.15	470
Southfleet	4	0.005	0.019	7.1	0.08	307	53	21	7.2	0.15	540
Wilmington	4	0.010	0.026	6.5	0.21	296	65	26	7.3	0.15	550
<u>Medway Water Board</u>											
Fawkham Pumping Station	7	0.000	0.000	4.6	0.11*	289	41	21	7.2		517
<u>Mid Kent Water Co.</u>											
Hartley Pumping Station	6	0.000	0.000	4.7	0.05*	266	21	14	7.2	< 0.1	-
Stansted "	1	0.000	0.000	2.7	0.00	267	15	13	7.3	< 0.1	-
<u>Private Supply</u>											
Lullingstone Est.	1	0.03	0.02	5.0	0.56	210	Nil	30	7.2		

**	Fawkhams Pumping Station	oxygen absorbed 3 hours at 37°C	-	=	not reported
**	Hartley	" "	"	"	27°C

Water (continued) Quality (continued)

1969

[illegible]

* Fawkhām Pumping Station oxygen absorbed 3 hours at 37°C — = not reported

Time	Temp	Remarks
10:00	27°C	* Hartley
10:15	"	"
10:30	"	"
10:45	"	"
11:00	"	"
11:15	"	"
11:30	"	"
11:45	"	"
12:00	"	"
12:15	"	"
12:30	"	"
12:45	"	"
13:00	"	"
13:15	"	"
13:30	"	"
13:45	"	"
14:00	"	"
14:15	"	"
14:30	"	"
14:45	"	"
15:00	"	"
15:15	"	"
15:30	"	"
15:45	"	"
16:00	"	"
16:15	"	"
16:30	"	"
16:45	"	"
17:00	"	"
17:15	"	"
17:30	"	"
17:45	"	"
18:00	"	"
18:15	"	"
18:30	"	"
18:45	"	"
19:00	"	"
19:15	"	"
19:30	"	"
19:45	"	"
20:00	"	"
20:15	"	"
20:30	"	"
20:45	"	"
21:00	"	"
21:15	"	"
21:30	"	"
21:45	"	"
22:00	"	"
22:15	"	"
22:30	"	"
22:45	"	"
23:00	"	"
23:15	"	"
23:30	"	"
23:45	"	"
24:00	"	"

TABLE

NITRATE NITROGEN IN WELL WATERS. DARTFORD AND DISTRICT
Parts per million

The World Health Organisation regards 12 p.p.m. as a level which when exceeded implies a possibility of infantile metahaemoglobinaemia.

Dartford BoroughWest Hill Hospital

51 samples	1953-69	6-14
	1970 Mar.	15
	Nov.	7.5
	1971 Jan.	8

J & E. Hall

Works	1953 Feb.	3
Victoria Road	1957 Feb.	14.3
Hythe Street	1958 Oct.	8
	Oct.	14

Dartford Paper Mills

Well C	1954 Mar.	11
Shed 5	1954 Mar.	8
3 throw pump	1954 Mar.	5
-do-	1954 Jan.	7
69 Priory Road	1952 Mar.	9
(One of 7 houses supplied by the Paper Mills-now changed to M.W.B.)		

Bexley Hospital

1963 Mar.	6
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London Paper Mills

No. 2 bore	1953 Jun.	6
No. 3 "	1955 Jan.	7
No. 1 "	1956 Feb.	3
No. 1 "	1965 Jun.	3
No. 1 "	1965 Jun.	6

Greaseproof Paper Mills

1956 Feb.	10
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Burroughs Wellcome

No. 3 bore	1952 Jun.	12.5
No. 1 "	1953 Feb.	2

Stanham Farm

1952 Feb.	6
1954 May	7
1954 Nov.	7
1958 July	10
1958 Sept	7
1958 Nov.	9

Dartford Rural DistrictParish of Horton Kirby or vicinity

Paper Mills	1957 Aug	6
	1957 Oct	4

Court Lodge Farm

	1948 Feb	7
	1948 July	6
	1949 Apr.	13
	1949 Jun	6
	1949 Dec	17
	1949 Dec	17
	1950 May	

Devon Cottages*	1948 Aug.	12.5
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Court Lodge Farm (continued)

1951 Sept.	16.7
1948 Feb.	8
1949 May	17
1949 Aug	10
1949 Oct	10
1950 May	7.0

Parish of Sutton-at-Hone or vicinityClement StreetAyre's Cottages, 2 wells*

	1949 Mar.	10.0
	1949 Sept.	7
	1949 Nov.	3
	1950 Jan.	9.0
	1950 Jan.	9.0
	1950 Jan.	5.0
	1951 Aug.	12.5
	1952 Sept	3.0

Ayre's Cottages (continued)

1954 Jun	10.0
1954 Jun	10.0
1956 Aug	12.5
1956 Aug	11.1
1957 Mar	8.0
1957 Mar	11.1
1957 July	7.0
1957 July	7.0

*Well no longer in use.

TABLE NITRATE NITROGEN IN WELL WATERS. DARTFORD AND DISTRICT (continued)
 Parts per million

Swanscombe U.D.

The Empire Paper Mills are supplied by two wells at Cobham Terrace and one at Southfleet Road. The precise well from which water has been sampled is not always certain.

1952 January	4.0
1953 July	10
1954 April	8
1956 November	4
1956 December	8.4 (Cobham Terrace well)

Water Authorities

The annual averages for samples from wells of the water authorities are given in the attached table.

The individual readings on which certain M.W.B. high averages were based were:

<u>Wilmington</u>	1961 Feb	8.0	<u>Southfleet</u>	1967 Feb	7.0
	May	9.0		Apr	8.0
	Aug	10.0		Aug	7.4
	1962 Feb	9.0		Nov	7.0
	May	8.0		1968 Feb	6.5
	Aug	10.0		Aug	6.5
	Nov	10.0		Nov	6.7
<u>Green Street</u>				Dec	8.7
<u>Green</u>	1960 Mar	6.0		1969 Feb	8.0
	May	6.5		May	6.4
No.1 well	Sept	7.5		Aug	6.9
No.2 well	Sept	7.5		Nov	8.1
	Dec.	8.0			
No.1 well	1961 Mar	not determined			
No.2 "	Mar	5.5			
No.1 "	June	8.0			
No.1 "	Sept	8.0			
No.2 "	Sept.	7.0			
No.1 "	Dec.	7.0			

Certain of the above readings are given to one place of decimals others to the nearest whole number hence the variation in presentation.

TABLE XXX- CHEMICAL RESULTS NITRATE NITROGEN

Individual wells of water undertakers Nitrate nitrogen p.p.m. average readings of each year

Rawwater except where otherwise stated Well	Average nitrate nitrogen										Number of samples on which each average is based									
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>Met. Water Board</u>																				
Darenth	5.5	4.5	5.3	4.8	5.1	5.0	4.6	4.7	4.6	4.6	6	4	4	5	4	4	4	4	4	4
Dartford	5.2	4.6	4.0	4.1	4.9	4.0	3.7	4.3	4.2	4.8	5	4	4	4	4	4	4	4	4	4
Eynsford	4.1	4.1	3.7	3.7	4.2	3.6	3.9	4.0	3.8	4.7	7	8	8	7	8	8	8	8	8	8
Green St. Green	7.1	7.1	6.6	6.3	6.3	5.3	6.0	6.4	5.9	6.4	5	6	7	8	8	7	5	8	8	8
Horton Kirby	4.5	4.8	4.2	4.4	4.8	4.5	4.3	4.8	3.8	4.7	6	8	8	8	8	8	8	8	8	8
Southfleet	6.2	5.1	6.0	5.6	6.6	6.1	6.4	7.4	7.1	7.5	3	4	4	4	4	4	5	4	4	4
Wilmington	7.8	9.0	9.3	6.9	8.3	6.9	7.5	7.3	6.5	7.6	3	3	4	3	6	4	4	4	4	3
Lullingstone	-	-	-	3.4	4.0	3.1	3.2	4.0	3.6	4.5	-	-	-	6	8	8	8	8	8	8
<u>Medway Water Board</u>																				
Fawkham well (tr. + raw)		5.1	5.2	4.9	5.3	5.0	4.4	4.5	4.0	4.0	-	5	3	6	4	4	5	5	7	6
Northfleet well (a)	-	-	-	4.6	5.0	5.1	4.9	4.6	4.9	4.5	-	-	-	5	4	4	3	4	5	7
" (b)	-	-	-	5.5	5.2	5.0	4.9	5.5	5.7	6.6	-	-	-	3	4	2	3	3	4	4
(b = treated)																				
<u>Mid Kent Water Co.</u>																				
Hartley Pumping Station (treated & raw)	5.0	5.0	5.3	5.3	5.6	6.5	4.7	4.4	4.7	4.8	4	2	6	2	3	1	7	3	6	6
Stansted Pumping Station	-	-	-	-	-	-	2.9	2.7	-	-	-	-	-	-	-	-	4	1	-	-

TABLE XXXI - DRAINAGE

DRAINAGE OF DWELLINGS BUILT:

	Main Drainage	Cesspool	Septic tank	Total
1968				
Council enterprise	168	-	-	168
Private enterprise	437	4	-	441
1969				
Council enterprise	64	4	-	68
Private enterprise	325	5	1	331

DRAINAGE WORK: The following are the details of work initiated by the Council's Public Health Inspectors.

	1968	1969
Pail closets abolished	4	2
Cesspools abolished and property connected to sewer	208	40
Drainage relaid	32	17
Covers renewed to inspection chambers and cesspools	1	9
Drains repaired	40	22
Water tests applied to drains	54	47
Smoke tests applied to drains	14	18

METHOD OF DRAINAGE: We have no precise figures for the ways in which the dwellings of this district are drained. The following was the approximate position at the end of 1969.

Dwellings with water closets draining into the sewer	17698
Dwellings with water closets draining into septic tanks	181
Dwellings with water closets draining into cesspools being emptied	855
Dwellings with water closets draining into cesspools not being emptied	750
Dwellings with chemical closets	16
Total	19500

HARTLEY/LONGFIELD/NEW BARN SEWERAGE SCHEME. This scheme was completed by the end of 1967.

WEST KINGSDOWN SEWERAGE SCHEME. This scheme was completed in March 1969.

DUPLICATION OF THE DARENTH VALLEY MAIN SEWER. The first part of this task which takes the duplication up to Hawley was completed in September 1968.

STONE OUTFALL WORKS. Drainage to Stone Outfall Works from the Parish of Stone and a portion of Swanscombe Urban District continued until July 1968. The work was then completed for the sewage received there to be drained with the aid of a pumping station to the West Kent Main Sewerage Works. The following summarises the analyses of the effluent from Stone Outfall Works while they were in use in 1968.

Averages in parts per million

Suspended matter	85
Albuminoid nitrogen	9
Oxygen absorbed in 4 hours 27°C	47
Oxygen absorbed 5 days 20°C (B.O.D.)	349
Number of samples	11

General characteristics:

Appearance of liquid	Turbid. Yellowish. Colloidal in all 11 samples
Appearance of sediment	Brownish flocculent in all 11 samples
Odour	Offensive in 5 samples
pH	7.2 - 7.6
Stability	Unstable in 5 samples. Stable in others up to 21 hrs
Presence of H ₂ S	Present in 5 samples

WEST KENT MAIN SEWERAGE WORKS. The typical figures for analyses of effluent were suspended solids 140 ppm. Oxygen absorbed 45 ppm. in 4 hours. Consent for secondary plant was applied for in 1967 but not given until 1970. These works contribute 4% of the pollution load of the tidal Thames.

TABLE XXXII - DRAINAGE (continued)

STANDARDS FOR SEWAGE EFFLUENTS ENTERING R.THAMES (1933)

	Limits
Teddington to London Bridge	30 ppm suspended matter 20 ppm dissolved O ₂ absorbed in 5 days
London Bridge to 20 mile pt Long Reach	Alb.ammonia 5.0 ppm O ₂ absorbed in 3 hrs at 37°C 50.ppm
20 mile pt Long Reach to Lower Hope	Alb.ammonia 7.0 ppm O ₂ absorbed in 3 hrs at 37°C 70 ppm.

THE RIVER THAMES

"In order to improve the condition of the Thames it is essential that a high reserve of dissolved oxygen be maintained in the river. The maximum amount of oxygen that can be dissolved into a given quantity of water is termed the 100% saturation value and the Port of London Authority have set a target of a minimum oxygen content of 10% saturation in all places and at all times in the tidal Thames to be achieved by 1980". At Long Reach within the boundary of this district the tidal Thames as it lowest oxygen content.

Long Reach		Dissolved oxygen (per cent saturation) Averages		
Flow 250 mgd	Teddington	1893	Third quarter	25% approx
"	"	1900-05	" quarters	25% "
"	"	1920-29	" "	8% "
"	"	1930-39	" "	6% "
"	"	1940-49	" "	5% "
"	"	1950-59	" "	0% "
1848	"	1968	year	15% "
1420	"	1969	"	18% "
1170	"	1970	"	12% "

The contributions in this area to the improvements of the 1960's included the reconstructions of the Crossness sewage works, the extension of sedimentation plant at the West Kent Main Sewerage Board Works, the closure of the small inefficient sewage works at Stone, the improvement of the small works at Swanscombe.

From 1964 onwards fish were periodically caught by the screens of Littlebrook and West Thurrock Generating Stations.

The improved oxygenation of the river appears also to be amenable to the organisms of the soil and intestine arriving in the effluents from the sewage works along the banks of the tidal Thames.

P.L.A. survey of River Thames 6. 10. 69

	Coliforms per 100 ml.	E coli per 100 ml.	Salmonellae per litre	Salmonellae isolated
Samples at high water				
Southend	8	3	0	
Gravesend	130	80	3	Enteritis + unnamed
Long Reach	14000	3000	13	Bredeney
Halfway Reach	25000	8000	13	Bredeney, Newport
Barking Reach	17000	8000	725	Bredeney
Woolwich	30000	5000	725	Bredeney, Reading
Limehouse	25000	5000	13	Typhimurium, Dublin
Lower Pier	11000	1000	5	Typhimurium
Chelsea	50000	20000	3	Brandenburg
Samples at half flood				
Corney Reach	13000	1000	13	Paratyphi B. Typhimurium, Stanley New-haw
Syon Reach	90000	1000	5	Typhimurium. Fischerkietz

TABLE XXXIII - FOOD HYGIENE

FOOD PREPARATION. The number of inspections made in 1968 and 1969 were 127 and 95 respectively. 8 and 6 informal notices were issued to secure compliance with the Food Hygiene Regulations. The following defects were remedied:-

	<u>1968</u>	<u>1969</u>
Wash-hand basins provided	5	2
Sinks for washing equipment	1	-
Hot water provided	3	2
First Aid equipment provided	5	2
Lighting and ventilation of food rooms provided	-	1
Sanitary accommodation repaired	2	1
Sanitary accommodation labelled	1	1
Miscellaneous repairs	9	8

REGISTERED PREMISES

DAIRIES. Dairy farms. On the 31st December the Ministry of Agriculture, Fisheries and Food had on their register:

	<u>1968</u>	<u>1969</u>
Dairy farms	22	22
Dairy farmers	21	21
Producers licences for untreated milk	5	5

Dealers. The Kent County Council as Food and Drugs Authority had in force in this Rural District the following licences for special designations:

	<u>1968</u>	<u>1969</u>
Untreated	11	11
Pasteurised	48	49
Sterilized	41	42
Ultra heat treated	25	27

Distributors. Regulations require this District Council to register distributors of milk, i.e. dairymen other than dairy farmers. Each dealer licensed above by the County Council to use a special designation is registered here as a distributor and the premises from which the milk is distributed are thus known to this office.

	<u>1968</u>	<u>1969</u>
Number of distributors on register at 31st Dec.	68	72

OTHER PREMISES. The Food and Drugs Acts require certain other premises to be registered by this Council. Those registered on 31st December were as follows:-

	<u>1968</u>	<u>1969</u>
Sausage making and cooked meats	17	18
Storage and sale of ice-cream	171	179
Manufacture and sale of ice-cream	-	-
Cooking of ham	9	10

IMPORTED FOOD. There are three depots in this district which receive consignments of imported food. The following inspections have been carried out by the Council's Public Health Inspectors.

	<u>1968</u>	<u>1969</u>
Inspections	12	27
Samples taken	5	52

EXPORTED FOOD. There are three cold stores dealing with meat and other frozen foods. Some food being exported from this country requires a certificate as to its fitness for human consumption and the Council's Public Health Inspectors issued the following certificates:

	<u>1968</u>	<u>1969</u>
Number of certificates issued for meat exported	1	3
Number of certificates issued for frozen fruit and vegetables exported.	-	-

TABLE XXXIII - FOOD HYGIENE (continued)

SURRENDER OF UNSOUND FOOD. The amount of food surrendered was:-

<u>1968</u>	<u>Meat</u>	<u>Other foods</u>
	3175 lbs meat	10,893 cans
	1 lamb	1,425 packets
	7 forequarters beef	810 lbs cereals
	1 leg and short loin porl	16 lbs grapes
		2,894 bottles soft drink
<u>1969</u>	2874 lbs meat	6,841 cans
	1 forequarter beef	183 packets frozen food
	53 lambs	

SEIZURE OF UNSOUND FOOD. None

FOOD UNFIT FOR CONSUMPTION EXPOSED FOR SALE. The items of food subject to complaint to this office by customers were:-

	<u>1968</u>	<u>1969</u>
Moulds	8	1
Adherent rust fragments	1	-
Iron and mineral oil	1	1
Insects and bird droppings	2	-
Milk (sour)	-	2
Slight deterioration	1	-
<u>1968</u>	Two were transferred to Kent County Council Weights and Measures Department for the necessary legal action to be taken. Proceedings had the following results:	

	<u>Fine</u>	<u>Costs</u>
Party-pies mould growth	£5	£3. 3. 0.
Loaf with rust fragments	£40	£6. 6. 0.

1969 None

LABORATORY EXAMINATIONS.

Ice-cream. The following results were obtained by the methylene blue tests.

	<u>1968</u>	<u>1969</u>
Grade I	5	6
Grade III	<u>2</u>	<u>-</u>
Total samples	<u>7</u>	<u>6</u>

Milk. The following results were obtained by the designation tests by the Weights and Measures Department of the Food and Drugs Authority.

Designation	Appropriate Test	No. of samples examined		Failed	
		<u>1968</u>	<u>1969</u>	<u>1968</u>	<u>1969</u>
Untreated	Methylene blue	-	-	-	-
Pasteurised	Methylene blue	24	29	1	1
	Phosphatase	24	29	-	-
Sterilized	Turbidity	-	-	-	-
Ultra-heat treated	Colony count	-	-	-	-

TABLE XXXIV - FOOD CONTENT

Samples taken by the County Sampling Officers within the Dartford District during 1968 and 1969 were as follows. The samples were taken by the County as this Rural District is not a Food and Drugs Authority.

<u>Summary</u>	<u>1968</u>	<u>1969</u>
Milk	38	45
Drugs	14	14
Spirits	10	10
Other samples	<u>95</u>	<u>100</u>
	157	169
Found unsatisfactory	20	22

Of the unsatisfactory samples 13 in 1968 and 4 in 1969 concerned matters recorded above under Food Hygiene. Of the remaining 7 and 18 relating to Food Content the details were as follows:

<u>No.</u>	<u>Samples</u>	<u>Analysis</u>	<u>Action taken</u>
<u>1968</u>			
1	Milk	Deficient in fat	Further samples satisfactory
1	"	Contained 3% water	Dairyman cautioned
1	Wheat flakes	" high moisture	Further samples satisfactory
2	Broken milk chocolate	" no butter fat	Retailer cautioned
1	Raspberries in syrup	" low fruit content	Manufacturers contacted
1	Caraway seeds	" low volatile oil	Further sample satisfactory
<u>1969</u>			
10	Milk	Contained 1-8% water	Further samples satisfactory
1	Cheese	" charred cheese	Manufacturers contacted
1	Milk chocolate fingers	" low butter fat	Further samples satisfactory
2	Shandy	" 2% proof above normal	Manufacturers contacted
2	Garden peas	" deficiency in weight	Manufacturers contacted
1	Ground nutmeg	" deficiency in volatile oil	Further samples satisfactory
1	Meat pie	" deficiency in meat	No action

TABLE XXXV - RODENT CONTROL, DISINFECTION AND DISINFESTATION

The following is a summary of the work carried out by the Council's Rodent Officer:

	1968		1969	
	Non-agricultural	Agricultural	Non-agricultural	Agricultural
RODENTS:				
Total No. of properties inspected following notification	531	32	455	10
No. infested by (i) rats	305	11	342	8
(ii) mice	87	1	122	2
Total No. of properties inspected for rats and/or mice for reasons other than notification	82	22	323	83
No. infested by (i) rats	78	10	69	49
(ii) mice	4	3	14	21

DISINFESTATION:

	1968	1969
Houses disinfested of bed bugs	1	5
Houses disinfested of fleas	11	7
Houses disinfested of ants	24	13
Houses disinfested of flies	3	7
Houses disinfested of swarms of bees	30	19
Wasps nest destroyed	35	186
Houses disinfested of silver fish	2	2
Houses disinfested of earwigs	2	1
Houses disinfested of cockroaches	-	1
Houses disinfested of red spider	-	1
Houses disinfested of wood-worm	-	1
Houses disinfested of wood-lice	-	1
Houses disinfested of other insects	6	7

DISINFECTION:

Houses, bedding etc. disinfected after infectious disease	-	-
---	---	---

TABLE XXXVI - NOISE

Complaints dealt with	Noise Abatement Act 1960
1968	
6 complaints	Electric motor of engineering works
	" " cold store
	Cutting machine construction works
	Grain drying
	Barking dogs (1) Wilmington, (1) West Kingsdown
1969	
4 complaints	Electric motor of engineering works
	Music etc. meeting hall Swanley
	" " " " Sutton-at-Hone
	Firing of guns Eynsford

TABLE XXXVII - PLACES OF WORK

FACTORIES:

Under the Factories Acts the district council enforces the following Sections:
 (a) Section 7 (sanitary conveniences) in all factories (b) Sections 1,2,3,4, 6
 (cleanliness, temperature, ventilation and drainage of floors) in all factories where
 mechanical power is not used.

The following work was carried out by the Council's Public Health Inspectors:

1. INSPECTIONS UNDER PART I, FACTORIES ACT 1961.

	Number on register		No. of inspections		Number of written notices		Number of occupiers prosecuted	
	1968	1969	1968	1969	1968	1969	1968	1969
Premises								
i) Factories in which sections 1,2,3,4,& 6 were to be enforced by the local authority	-	-	-	-	-	-	-	-
ii) Factories not included in (i) in which S.7 is enforced by the local authority	119	126	21	15	1	-	-	-
iii) Other premises in which S.7 is enforced by the local authority	29	25	-	-	-	-	-	-
Totals	148	151	21	15	1	-	-	-

2. PARTICULARS OF DEFECTS FOUND:

Particulars	Number of defects found		Defects remedied		Referred to H.M. Inspector		Referred by H.M. Inspector		Number of prosecutions	
	1968	1969	1968	1969	1968	1969	1968	1969	1968	1969
Section 1	-	-	-	-	-	-	-	-	-	-
Sections, 2,3,4,& 6	-	-	-	-	-	-	-	-	-	-
Section 7 (Sanitary conveniences)										
(a) Insufficient	-	-	-	-	-	-	-	-	-	-
(b) Unsuitable or defective	2	3	2	3	-	-	-	-	-	-
(c) Not separate for the sexes	-	-	-	-	-	-	-	-	-	-
(d) Other offences against the acts (excluding out- workers)	-	-	-	-	-	-	-	-	-	-
Totals	2	3	2	3	-	-	-	-	-	-

REMAINDER OF PROVISIONS OF FACTORY ACT. In regard to public health, welfare and safety these provisions are the concern of H.M. District Inspector of Factories but such local information is not available to this Council.

TABLE XXXVII - PLACES OF WORK (continued)

OUTWORKERS:

	1968	1969
(a) Total number of outworkers notified to the Council by firms in the Dartford Rural District under Section 110 (1c) Factories Act, 1961	57	Nil
(b) Total numbers of outworkers notified by Dartford Rural District Council to other Councils under Section 110 (2) Factories Act, 1961	17	1
(c) Total number of outworkers notified to Dartford Rural District Council by other Councils under Section 110 (2)	32	27
(d) Total number of outworkers employed in Dartford Rural District	72	26
(e) Total number of inspections or work-places under Section 111 (i) Factories Act, 1961	Nil	Nil
(f) Scheduled occupations followed by outworkers in Dartford Rural District -		
Making wearing apparel	24	8
Making of boxes or other receptacles or parts thereof made wholly or partially of paper, cardboard, chip or similar material	27	1
Firework cases	5	6
Christmas crackers	-	-
Lampshades	15	10
Metal work	1	1

SHOPS AND OFFICES AND RAILWAY PREMISES: TABLE XXXVIII

Number of premises registered under the Office, Shops and Railway Premises Act, 1963:

	1967	1968	1969
Offices	67)	69)	72)
Retail Shops	180)	181)	183)
Wholesale shops and warehouses	11) 305	12) 311	12) 316
Catering establishments open to the public, canteens	43)	44)	44)
Fuel storage depots	4)	5)	5)

The total number of visits to the premises made by the Councils Public Health Inspectors was as follows:

<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
358	356	75	85	86	92

Number receiving one or more general inspections during the year:

	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Offices	13	42	6	-	14	16
Retail Shops	24	125	29	29	19	29
Wholesale shops	1	9	1	-	-	1
Catering establishments	1	29	8	-	1	2
Fuel storage depots	-	3	2	-	1	-

TABLE XXXVIII - PLACES OF WORK (continued)

Offices, Shops and Railway Premises Act 1963 (continued)

Analysis of persons employed in registered premises by workplace

Class of workplace	Number of persons employed					
	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Offices	535	550	552	624	817	1072
Retail shops	619	635	621	628	629	682
Wholesale shops, warehouses	152	159	182	180	200	236
Catering establishments	169	162	157	155	160	161
Canteens	13	13	13	13	15	15
Fuel storage depots	24	28	28	28	35	37
Total	1512	1547	1553	1628	1856	2203
Total males	738	752	771	812	943	1094
Total females	774	795	782	816	913	1109

Accidents

Year	Age	Sex	Causation	Injuries (all not fatal)	Type of premises
1964	-	-	-	-	-
1965	34	M	Fall	Fractured rib	Retail shop
1965	18	F	"	Laceration of ear	Canteen
1966	-	-	-	-	-
1967	71	F	"	Fractured wrist	Catering establishment
1967	48	F	"	Laceration of lower forearm	Retail shop
1968	48	F	"	Bruising and abrasions	Wholesale shop
1969	16	F	Collision	Abrasions	Retail shop
1969	37	M	Slipped	Bruising	Wholesale shop

ENFORCEMENT OF THE ACT

Local authorities enforce the general provisions in most office and shop premises. From this duty the above information is available.

H.M. District Inspector of Factories is responsible for enforcing the general provisions in premises occupied by local authorities, in railway premises, fuel storage depots on railway land and offices in factories. He is also responsible for inspecting premises owned or occupied by the Crown. The relevant local information arising from this duty is not available to this Council.

H.M. Inspector of Mines and quarries is responsible for enforcement in offices, shops and fuel storage premises in mines and quarries. The relevant local information arising from this duty is not available to this Council.

Fire authorities enforce, for the most part the fire provisions of the Act. The relevant local information arising from this duty is not available to this Council.

TABLE XXXIX - RADIOACTIVITY

Radioactive Substances Act 1960

Certificates of Registration under Section 1

Date registered	Premises	Radioactive substance	Maximum radioactivity	Date from which use began	Registration revoked w.e.f.
24.9.63	Associated Portland Cement Manufacturers Ltd. Research Dept.Greenhithe Stone	Sr 90	20 millicuries	1.12.63	
14.9.64	Beddington Nut & Produce Company Ltd.	Caesium 137	2 "	15.9.64	
3.3.65	Greater London Council London Fire Brigade Residential Training College,Swanley	Cobalt 60 Radium 226	35 " 1 "	3.3.65	16.6.66
21.5.68	Associated Portland Cement Manufacturers Ltd. Kent Works,Greenhithe, Stone	Iron 55 Caesium 137	5 " 100 "	22.5.68	13.6.69
12.6.69	Associated Portland Cement Manufacturers Ltd. Kent Works, Greenhithe,Stone	Iron 55 Caesium 137	5 " 205 "	13.6.69	6.8.70

Certificate of Authorisation for the disposal and accumulation of radioactive waste under Section 6 & 7

	Premises	Radioactive substance	Maximum amounts per year	Effective date of registration
25.6.68	Littlebrook Power Station	Tritium Other	30 curies 3 curies	26.6.68

TABLE XL-ATOMIC OR HYDROGEN BOMB TESTS

For reference in interpreting graphs on radioactivity of rain

1958	Test	High northern latitude	) massive weapon tests
1961	"	" " "	
1962	"	Pacific and northern latitudes	
1963	TEST BAN TREATY. Suspension of weapon tests		
1964	Nuclear device detonated by Chinese, Central Asia		
1966	Three Chinese tests in Central Asia		
1967	Two	" " " "	
1968	Five	French tests in the S.Pacific	
1968	One	Chinese test in Central Asia	
1969	"	" " " "	
1970	"	" " " "	
1970	One	French test in S.Pacific	

RADIOACTIVITY (continued)

Radioactive waste from major nuclear power stations

Local authorities must be consulted before authorisations for the disposal of radioactive waste are granted in respect of major nuclear establishments and joint authorisation is required from both the Minister of the Environment and the Minister of Agriculture, Fisheries and Food.

In 1968 Dartford R.D., Dartford M.B. and Kent C.C. were consulted by the two Ministries and the Secretary of State for Wales on an application from the Central Electricity Generating Board for the disposal of radioactive waste oil by burning it in the oil-fired furnaces of Littlebrook Power Station. Such radioactive waste oil arises from leakage from oil seals in contact with coolant gases of reactors of nuclear power stations. Each such station incurs a waste of about 15000 gallons of such oil a year containing upto 10 curies of tritium and upto 1 curie of other radionuclides.

The proposal was for Littlebrook to burn the contaminated oil from three nuclear power stations one of which might be in Wales. Thus the oil to be burnt would contain upto 30 curies of tritium and upto 3 curies of other radionuclides. The Ministers and the Secretary of State were satisfied that the burning of such oil in such quantities would not cause hazard to public health. Emissions from the stack would contain concentrations well below the maximum recommended by the international commission and at ground level the concentration would be even less. In the ash the concentration would be so low as to require no special precautions. Transport of the oil to the power station by road would involve no special risk in the event of accident. Owing to the dispersal of the flue gases and the ash there would be no build-up of radioactivity.

Check measurements would be made.

Local calculations so far as one's limitations allowed gave conclusions in harmony with the observations of the Ministry.

The 3 curies of radioactive nuclides other than tritium would be from one or more of the following activation products: sulphur 35, calcium 45, chromium 51, manganese 54, iron 55, iron 59, cobalt 60, zinc 65, silver 110m., antimony 124 and mercury 203. There may be some fission product and alpha contamination under abnormal circumstances such as a leaking fuel element in the reactor but activation products would generally predominate.

Authorisation was issued on 26th June 1968.

The conditions for accumulation were that:

- (a) the waste is stored in the tanks used for the storage of fuel oil in bulk;
- (b) the waste is disposed of as soon as practicable.

The conditions for disposal were that:

- (a) the waste is mixed with fuel oil which is not radioactive and burnt therewith in the furnaces;
- (b) the waste disposed of does not exceed in one year 30 curies of tritium and 3 curies other radionuclides;
- (c) the Board takes samples of the waste and if so directed causes such samples to be examined, retained and the results recorded.

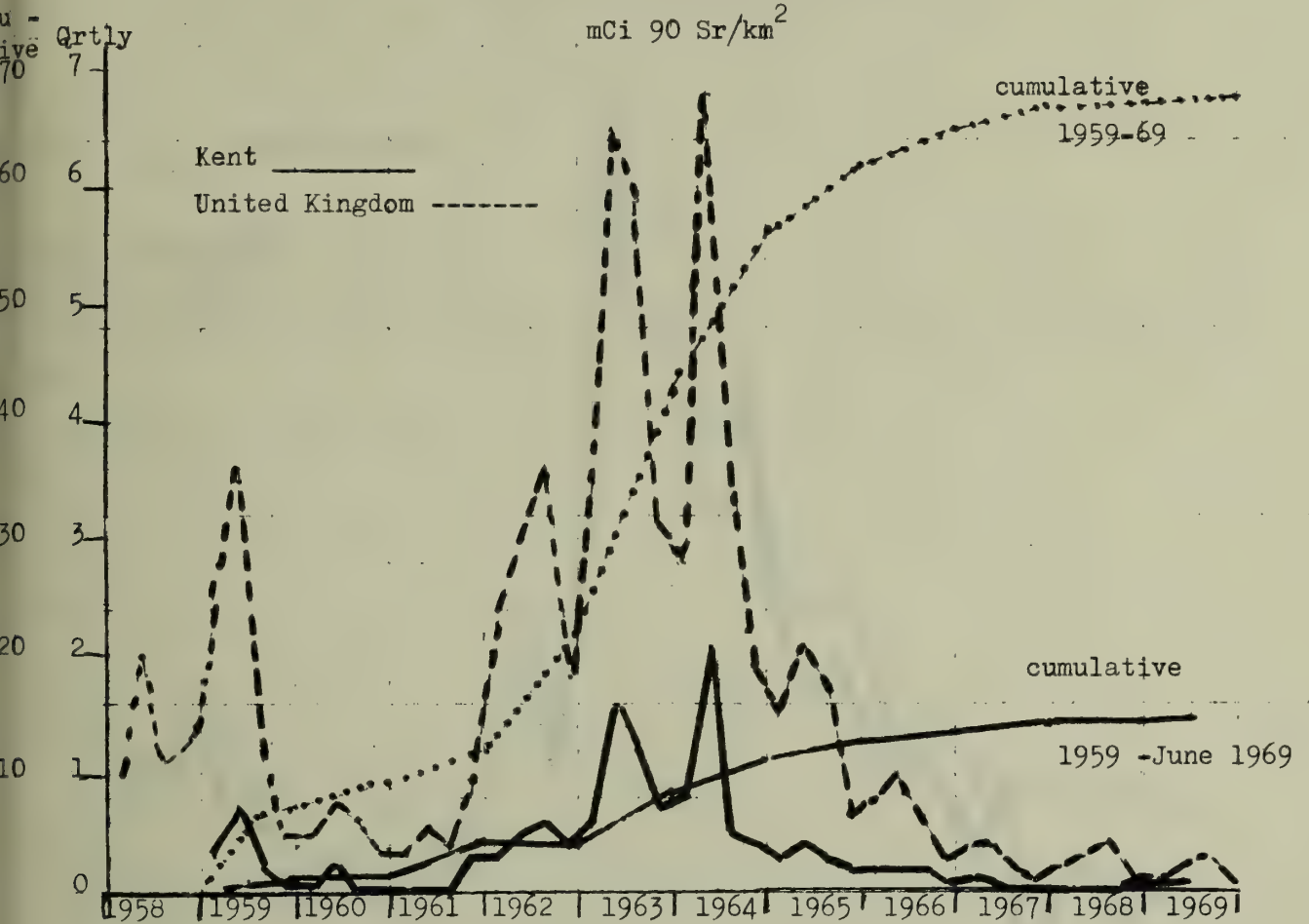
During 1969 the waste oil burnt at Littlebrook Power Station contained only 5.2 millicuries of tritium and 8.8 millicuries of other radionuclides. At certain other power stations burning oil with similar levels of activity measurements had shown that the burning of the contaminated oil had no detectable effect on the environment. Consequently as there was so little activity in the oil burnt at Littlebrook Power Station similar checks on the environment were not considered necessary.

RADIOACTIVITY

RAIN

Strontium 90 deposited by rain

mCi 90 Sr/km²



1958-69

Quarterly deposition of Sr-90 by rain

mCi 90 Sr/km²

	Kent	U.K.		Kent	U.K.		Kent	U.K.		Kent	U.K.
1958	?	1.0	1961	0.0	0.3	1964	0.8	2.8	1967	0.1	0.4
	?	2.0		0.0	0.5		2.1	6.8		0.1	0.4
	?	1.1		0.1	0.4		0.5	3.4		0.0	0.2
	?	1.3		0.3	1.0		0.4	1.9		0.0	0.1
1959	0.3	2.4	1962	0.3	2.3	1965	0.3	1.5	1968	0.0	0.2
	0.7	3.6		0.5	3.0		0.4	2.1		0.0	0.3
	0.2	1.2		0.6	3.6		0.3	1.7		0.0	0.4
	0.1	0.5		0.4	1.8		0.2	0.7		0.1	0.1
1960	0.1	0.5	1963	0.6	3.5	1966	0.2	0.8	1969	0.1	0.1
	0.2	0.7		1.6	6.5		0.2	1.0		0.1	0.2
	0.1	0.6		1.2	5.9		0.2	0.6			0.3
	0.1	0.3		0.7	3.1		0.1	0.3			0.1

1959-69

Cumulative deposit of Sr-90 by rain

1959	1.3	7.7.	1962	4.0	22.7	1965	13.1	62.6	1968	14.1	67.4
1960	1.8	9.8	1963	8.1	41.7	1966	13.8	65.3	1969	14.3*	68.1
1961	2.2.	12.0	1964	11.9	56.6	1967	14.0	66.4			* to June only

Not corrected for radioactive decay

RADIOACTIVITY

MILK

Ratio of Strontium 90 to Calcium



Milk		Strontium Units		Sr-90		pCi ⁹⁰ Sr/g Ca					
Kent	U.K.	Kent	U.K.	Kent	U.K.	Kent	U.K.	Kent	U.K.		
1958	?	4	1961	4	6	1964	28	32	1967	9	11
	?	6		4	7		28	33		7	10
	?	9		4	6		21	24		5	8
	?	8		5	6		19	23		8	7
1959	8	9	1962	4	6	1965	26	26	1968	1	8
	11	12		8	11		17	19		2	8
	7	10		13	16		13	16		5	8
	6	7		12	14		12	15		4	7
1960	6	8	1963	9	11	1966	13	16	1969	2	7
	5	7		20	21		11	14		3	8
	4	5		34	37		9	10		?	7
	4	4		28	33		8	9		?	7
Annual means											
1958	?	7	1961	4	6	1964	24	28	1967	7	9
1959	8	10	1962	9	12	1965	17	19	1968	3	8
1960	5	6	1963	23	26	1966	10	12	1969	?	7

Kent measurements from reports of the County Analyst

United Kingdom measurements from reports of the Agricultural Research Council

TABLE XLI - SMOKE CONTROL

SMOKE CONTROL ORDERS

The following orders were confirmed in 1968-69

	Swanley West	Bean	Swanley (East & Central)
<u>Privately owned dwellings</u>	1968	1968	1969
No. of dwellings in each area	594	217	1403
No. of dwellings in which works eligible for grant were carried out	88	23	226
Total cost of works eligible for grant	£2741	£590	£7435
Total expenditure by local authority on mandatory (7/10ths) grant	£1919	£413	£5205
No. of dwellings in respect of which discretionary grants were paid	Nil	3	8
Total expenditure by local authority on discretionary* grants	Nil	£14	£30
Gross expenditure of local authority on works carried out by the local authority in default of the owner or occupier's compliance with a notice served under Section 12(2)	Nil	Nil	Nil
Net expenditure of local authority on works carried out by the local authority in default of the owner or occupier's compliance with a notice served under Section 12(2)	Nil	Nil	Nil
Exchequer contribution (4/11ths)	£1097	£244	£2992
<u>Local authority dwellings</u>			
No. of dwellings in each area	1178	203	377
No. of dwellings in which works eligible for grant were carried out	275	2	79
Total cost of works eligible for grant	£9939	£114	£4068
Exchequer contribution	£3976	£46	£1637

SMOKE NUISANCE

Number of complaints received relating to smoke nuisances from:

	Bonfires (private houses)	Nurseries	Poultry farms	Factories
1968	3	1	-	-
1969	3	-	1	2

* Discretionary grants here refer to grants given to those unable to meet their 3/10ths portion of the cost.

AIR POLLUTION WITH PRODUCTS OF COMBUSTION
The Volumetric Gauges

The management of the local authority gauges is provided by the Council's Public Health Inspectors. The nature of the sites of the gauges needs consideration if one is to study the records of the whole area.

Swanley 1 Code B3 is in the public health office which is one of numerous separate well-spaced buildings in their own grounds on central heating by oil or electricity. Medium density housing lies to the North-East round to the South-West. Elsewhere there is open space.

Stone (Horns Cross) Code X is in the A.P.C.M. research laboratory which again is in park land beyond which is medium density housing in the West and North-West $\frac{2}{3}$ mile to the North are two cement works.

Swanscombe 2 Code B2 is in the precincts of the Swanscombe Council Offices in a small park amongst medium density housing with open space within $\frac{1}{4}$ mile to the South and to the North. Cement works lie $\frac{2}{3}$ mile to the North and a mile beyond is the River Thames and its open space.

Northfleet 5 Code X is on the 2nd floor of Northfleet Council Offices. In the immediate vicinity is residential housing of medium density. Open country begins within $\frac{1}{4}$ mile to the South. Within $\frac{1}{2}$ mile to the North and N.E. is an industrial area with a cement works, paper factory and electricity generating station dominating the environment. To the North beyond is the open space of the River Thames.

Dartford 6 Code D2 is in the health office in the commercial centre of the town set back 10 yards from a traffic laden street and with a park in the vicinity to the South and industry to the North.

Three gauges - Stone (Horns Cross), Swanscombe and Northfleet have cement works in the vicinity. These might be kept in mind as the dust from these works will modify the darkness of the smoke stain and it is possible that it might diminish the acidity from which the SO_2 readings are assessed.

Class Code (National Survey Site Classification)

In the national survey of which these readings form part each gauge site is given a code number as a concise way of classifying the surroundings of each site. The meanings of the codes are as follows:

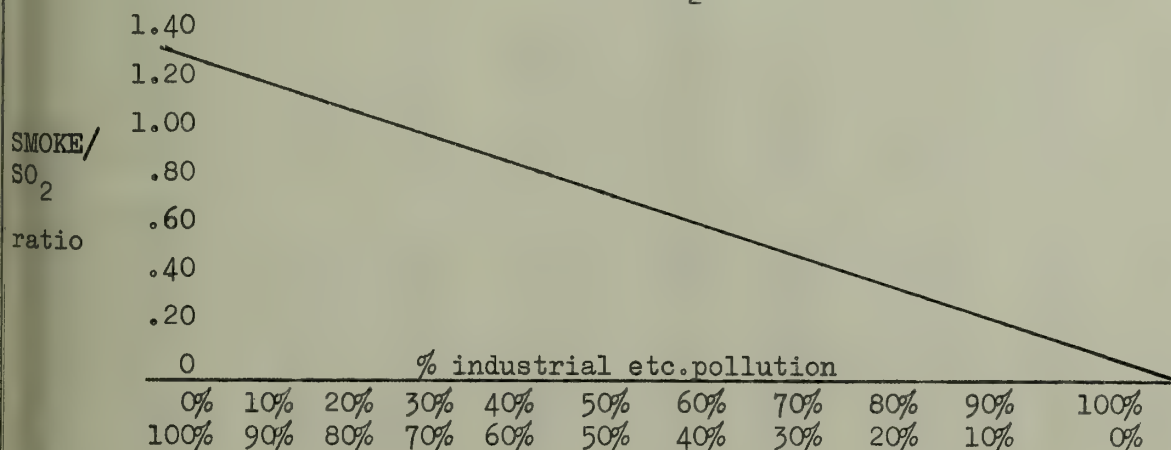
- B2 Residential area with medium density housing, typically in an inner suburb or housing estate, surrounded by other built-up areas but interspersed with some industrial undertakings
- B1 Residential area with medium-density housing typically an inner suburb or housing estate, surrounded by other built-up areas.
- B3 Residential area with medium-density housing surrounded by or interspersed with areas with low potential A.P. output (park, fields, coast) or any residential area with low-density housing.
- C1 Industrial area without domestic premises
- C2 Industrial area interspersed with domestic premises of high density or in multiple occupation
- D1 Commercial area or one with predominantly central heating
- D2 Small town centre, limited commercial area mixed with old residential housing and possibly minor industry.
- E Smoke control area or smokeless zone (the letter to be added to the primary classification).
- O1 Open country but not entirely without source(s) of pollution, e.g. airfields.
- R Rural community
- X Unclassified site or mixed area
- A2 Residential area with high and medium density housing surrounded by built-up areas interspersed with industrial undertakings.

Smoke calculations. These are by use of the British Standard Smoke Calibration Curve.

AIR POLLUTION WITH PRODUCTS OF COMBUSTION INTERPRETATION OF SMOKE/SO₂ RATIOS

In 1965 in England and Wales 0.90 million tons of smoke with 0.70 million tons of SO₂ were emitted from domestic coal-fired chimneys. From the chimneys of efficient fuel combustion i.e. industry and power stations 0.25 million tons of smoke were emitted with 5.62 million tons of SO₂ (investigation Atmos.Pull.1956-66 tables 1 and 2). Thus, the smoke/SO₂ ratios of these emissions were 90/70 = 1.29 and 0.25/5.62 = 0.05 and for the whole country was 0.90 + 0.25/0.70 + 5.62 = 1.15/6.32 = 0.18. An oversimplification of the ratios resulting from different proportions of the two sources was:

Domestic Coal burning	Efficient combustion (industry)	Smoke/SO ₂ ratio of mixture	
100%	0%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 100 + 0.05 \times 0}{1 \times 100 + 1 \times 0} = 1.29$	
90%	10%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 90 + 0.05 \times 10}{1 \times 90 + 1 \times 10} = 1.16$	
80%	20%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 80 + 0.05 \times 20}{1 \times 80 + 1 \times 20} = 1.04$	
70%	30%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 70 + 0.05 \times 30}{1 \times 70 + 1 \times 30} = 0.92$	
60%	40%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 60 + 0.05 \times 40}{1 \times 60 + 1 \times 40} = 0.79$	
50%	50%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 50 + 0.05 \times 50}{1 \times 50 + 1 \times 50} = 0.67$	
40%	60%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 40 + 0.05 \times 60}{1 \times 40 + 1 \times 60} = 0.55$	
30%	70%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 30 + 0.05 \times 70}{1 \times 30 + 1 \times 70} = 0.42$	
20%	80%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 20 + 0.05 \times 80}{1 \times 20 + 1 \times 80} = 0.30$	
10%	90%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 10 + 0.05 \times 90}{1 \times 10 + 1 \times 90} = 0.17$	
0%	100%	$\frac{\text{Smoke}}{\text{SO}_2} = \frac{1.29 \times 0 + 0.05 \times 100}{1 \times 0 + 1 \times 100} = 0.05$	



AIR POLLUTION WITH PRODUCTS OF COMBUSTION
MONTHS OF MINIMUM POLLUTION
microgrammes per cubic metre

Gauge and year	June			July			August		
	Smoke	SO ₂	Ratio	Smoke	SO ₂	Ratio	Smoke	SO ₂	Ratio
SWANLEY									
1963	19	68	.28	20	54	.37	20	39	.51
1964	19	65	.29	21	75	.28	25	75	.33
1965	21	95	.22	15	68	.22	20	88	.23
1966	22	65	.34	19	70	.27	14	68	.21
1967	12	68	.18		N			N	
1968	13	66	.20	15	61	.25	13	61	.21
1969	16	72	.22	27	90	.30	12	63	.19
1970	14	84	.17	12	50	.24	15	60	.25
HORNS CROSS									
1963	15	71	.21	10	61	.16	12	48	.25
1964	16	51	.31	21	70	.30	21	67	.31
1965	15	66	.23	8	45	.18	18	53	.34
1966	19	44	.43	20	30	.67	21	28	.75
1967	15	47	.32	13	53	.25	N	N	N
1968	13	63	.21	13	40	.33	13	31	.42
1969	11	87	.13	20	76	.26	7	68	.10
1970	10	99	.10	10	44	.23	12	71	.17
NORTHFLEET									
1963	17	90	.19	11	58	.19	12	54	.22
1964	17	58	.29	17	17	.15	21	75	.28
1965	16	101	.16	13	61	.21	20	83	.24
1966	20	88	.23	22	74	.30	21	72	.29
1967	16	93	.17	17	75	.23	19	58	.33
1968	18	84	.21	16	68	.24	18	47	.38
1969	23	90	.26	18	64	.28	7	71	.10
1970	16	96	.17	11	45	.24	17	43	.40
SWANS COMBE									
1963	-	-	-	-	-	-	-	-	-
1964	-	-	-	-	-	-	-	-	-
1965	-	-	-	-	-	-	-	-	-
1966	18	92	.20	19	55	.35	18	77	.23
1967	15	72	.21	13	62	.21	13	42	.31
1968	15	83	.18	15	66	.23	15	57	.26
1969	15	111	.14	28	97	.29	9	98	.09
1970	15	125	.12	11	62	.18	11	66	.17
DARTFORD									
1963	30	108	.28	26	76	.34	29	81	.36
1964	31	88	.35	29	91	.32	36	89	.40
1965	30	104	.29	23	74	.31	40	94	.43
1966	34	94	.36	41	81	.51	36	98	.37
1967	34	111	.31	28	97	.29	34	77	.44
1968	35	109	.32	41	102	.40	44	98	.45
1969	36	95	.38	48	111	.43	22	104	.21
1970	47	122	.39	41	55	.75	47	84	.56

AIR POLLUTION WITH PRODUCTS OF COMBUSTION
MONTHS OF MAXIMUM POLLUTION

microgrammes per cubic metre

Gauge and year	December			January			February		
	Smoke	SO ₂	Ratio	Smoke	SO ₂	Ratio	Smoke	SO ₂	Ratio
SWANLEY									
1963/64		N			N			N	
1964/65	102	208	.49	62	146	.42	65	213	.31
1965/66	51	102	.50	53	150	.35	47	83	.57
1966/67	67	120	.56	82	173	.47	57	123	.46
1967/68	90*	173	.52	66	178	.37	63	132	.48
1968/69	56	135	.41	50*	106	.47	61	181	.34
1969/70	52*	206	.25	31	120	.26	33	142	.23
1970/71	47	129	.36	43*	108	.40	48	137	.35
HORNS CROSS									
1963/64	139	149	.93	133	153	.87	171	165	1.04
1964/65	91	137	.66	54	101	.53	82	151	.54
1965/66	81	78	1.04	83	89	.93	44	54	.81
1966/67	59	73	.94	72	97	.74	47	61	.77
1967/68	66	93	.71	55	125	.44	50	78	.64
1968/69	47	95	.49	40	67	.60	60	161	.37
1969/70	46	106	.43	31	63	.49	28	109	.26
1970/71	39	57	.68	42	85	.49	50	115	.43
NORTHFLEET									
1963/64	167	157	1.06	159	175	.91	194	178	1.09
1964/65	101	198	.51	68	138	.49	87	185	.47
1965/66	93	165	.56	114	165	.69	53	101	.52
1966/67	67	142	.47	89	168	.53	58	110	.53
1967/68	87	171	.51	74	191	.39	59	105	.56
1968/69	72	113	.64	59	130	.45	83	205	.40
1969/70	62	73	.85	N	N	N	34	57	.60
1970/71	60	96	.63	48	77	.62	47	86	.55
SWANSCOMBE									
1963/64	-	-	-	-	-	-	-	-	-
1964/65	-	-	-	-	-	-	-	-	-
1965/66	94	96	.98	104	115	.90	49	63	.78
1966/67		N		85	146	.58	-	-	-
1967/68	89*	136	.65	75	159	.47	74	98	.76
1968/69	N	N	N	65	85	.76	72	190	.38
1969/70	66*	160	.41	53	95	.56	46	130	.35
1970/71	55	84	.65	47	94	.50	42	129	.33
DARTFORD									
1963/64	214	268	.80	197	282	.70	199	262	.76
1964/65	130	259	.50	91	203	.45	103	293	.33
1965/66	117	186	.63	132	226	.58	69	121	.57
1966/67	94	183	.51	116	238	.49	74	152	.49
1967/68	106	265	.40	91	304	.30	111	204	.54
1968/69	106	184	.58	81	166	.49	103	264	.39
1969/70	99	214	.46	77	139	.55	61	175	.35
1970/71	97	177	.55	75	161	.47	75	176	.43

* estimated from reflectometer of less than 40

AIR POLLUTION WITH PRODUCTS OF COMBUSTION
NUMBER OF DAYS WHEN READINGS EXCEEDED 500 MICROGRAMMES PER CUBIC METRE
Highest daily readings given with month

Code	Gauge site	Winter	Smoke	Sulphur-dioxide
B3	SWANLEY 1	1963/4	3 619 (Dec)	4 786 (Jan)
		1964/5	0 0	3 730 (Dec)
		1965/7	0	0
		1967/8	0	1 603 (Dec)
		1968/9	0	2 604 (Feb)
		1969/70	0	2 773 (Dec)
X	HORNS CROSS (STONE)1	1963/4	2 873 (Nov)	0
		1964/70	0	0
B2	SWANSCOMBE 2	1966/67	0	0
		1967/8	0	1 554 (Jan)
		1968/70	0	0
X	NORTHFLEET 5	1963/4	3 534 (Feb)	4 542 (Feb)
		1964/5	0	0
		1965/6	0	1 562 (Dec)
		1966/7	0	1 556 (Jan)
		1967/8	0	0
		1968/9	0	1 549 (Feb)
		1969/70	0	0
D2	DARTFORD 6	1963/4	5 837 (Feb)	11 785 (Jan)
		1964/5	0	8 1106 (Nov)
		1965/6	0	1 533 (Nov)
		1966/7	0	4 542 (Jan)
		1967/8	0	4 1069 (Jan)
		1968/9	0	2 575 (Jan)
				2 632 (Feb)
		1969/70	0	1 644 (Dec)

DEGREE DAYS

	Av.1950-70	1962-3	1963-4	1964-5	1965-6	1966-7	1967-8	1968-9	1969-70
Sept	140	202	169	143	186	129	124	101	104
Oct	291	312	308	393	272	243	224	169	207
Nov	501	560	423	425	565	515	535	474	508
Dec	647	793	796	652	590	560	633	724	687
Jan	701	1031	765	653	740	619	646	541	639
Feb	631	859	625	623	447	507	675	705	601
Mar	558	556	657	550	497	436	488	624	655
Oct-Mar	3329	4111	3574	3296	3111	2880	3201	3237	3297
April	413	410	411	383	398	434	408	418	478
May	253	310	172	233	260	261	310	245	187
Sept-May	4135	5033	4326	4055	3955	3704	4043	4001	4066
June	125	124	142	130	75	125	108	142	80
July	75	104	55	96	87	55	82	57	74
August	83	118	81	90	113	79	54	62	70
June-Aug	283	346	278	316	275	259	244	261	224

Degree day: each 1°F below 60°F maintained for 24 hours. Source Gas Council



SMOKE THAMES-SIDE WINTER

Code	Site	1962-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70
microgrammes per cubic metre									
B1	Bexleyheath 1	N	156	115	83	75	66	66	52
C2	Erith 1	92	76	N	-	-	-	-	-
A2	Erith 3	184	168	N	N	84	75	68	55
C1	Erith 4	-	-	N	56	46	N	39	51
D2	Crayford 2	101	141	65	83	77	73	76	52
B3	Sidcup 3	123	120	89	71	59	50	48	33
B3	Swanley 1	116	114	74	53	60	N	50	33
D2	Dartford 6	146	144	103	94	89	87	89	62
X	Stone I Horns Cross	102	102	N	63	52	46	43	31
B2	Swanscombe 2	-	-	-	N	N	63	61	47
X	Northfleet 5	119	118	82	76	63	58	64	N
B3/E	Thurrock 6	105	86	80	67	64	58	52	39
B1	Thurrock 7	141	139	131	113	92	94	89	87
D2	Thurrock 9	-	-	119	99	87	79	N	47
B2	Tilbury/Thurrock 26	-	-	-	-	N	N	62	57
B3	Tilbury/Thurrock 29	-	-	-	-	N	36	31	29
O1	Tilbury/Thurrock 30	-	-	-	-	N	N	34	32
O1	Tilbury/Thurrock 31	-	-	-	-	N	N	35	33
B3	Tilbury/Thurrock 32	-	-	-	-	N	54	44	N
R	Tilbury/Thurrock 33	-	-	-	-	N	32	N	N
R	Tilbury/Thurrock 34	-	-	-	-	N	26	N	N
D1	Gravesend 22	177	179	121	N	N	-	-	-
D1	Gravesend 23	-	-	-	-	-	-	45	N
B3	Strood 2	123	119	99	77	73	64	65	52
R	Kingsnorth 1	-	-	-	-	-	-	N	21
X	Kingsnorth 3	-	-	-	-	N	34	N	38
O1	Kingsnorth 4	-	-	-	-	N	N	N	30
O1	Kingsnorth 5	-	-	-	-	N	29	N	27
B3	Kingsnorth 7	-	-	-	-	N	31	N	N
X	Kingsnorth 8	-	-	-	-	N	42	N	36
B3	Kingsnorth 9	-	-	-	-	N	33	N	28
O1	Kingsnorth 10	-	-	-	-	N	34	N	31
B3	Kingsnorth 11	-	-	-	-	N	38	N	34
R	Kingsnorth 12	-	-	-	-	N	44	N	N
A1	Rochester 4	133	N	99	90	65	64	67	44
X	Chatham 3	N	134	88	84	64	57	53	51

Source National Survey

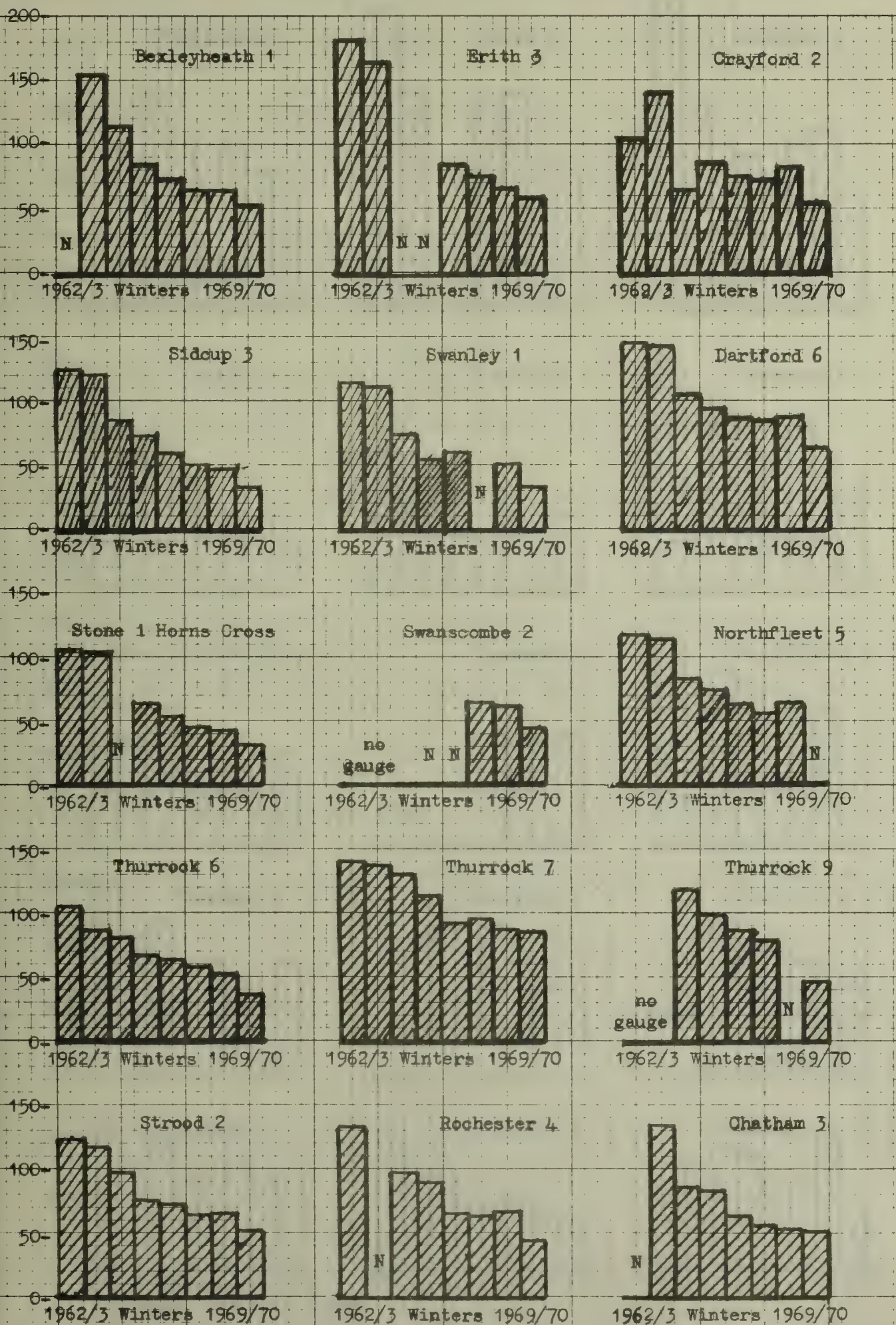
SULPHUR DIOXIDE THAMES-SIDE WINTER

Code	Site	1962-3	63-64	64-65	65-66	66-67	67-68	68-69	69-70
microgrammes per cubic metre									
B1	Bexleyheath 1	N	198	212	177	94	179	155	139
C2	Erith 1	185	60	N	-	-	-	-	-
A2	Erith 3	280	217	N	N	202	214	157	157
C1	Erith 4	-	-	N	114	137	N	160	184
D2	Crayford 2	293	209	177	166	141	177	184	132
B3	Sidcup 3	216	185	195	163	123	133	133	110
B3	Swanley 1	182	141	169	124	120	N	123	135
D2	Dartford 6	256	N	225	181	173	202	173	150
X	Stone I Horns Cross	143	110	N	84	67	75	96	83
B2	Swanscombe 2	-	-	-	N	N	108	108	111
X	Northfleet 5	190	125	164	152	127	126	130	N
B3/E	Thurrock 6	198	159	169	129	138	124	101	134
B1	Thurrock 7	192	150	168	141	167	138	119	140
D2	Thurrock 9	-	-	169	118	141	135	N	129
B2	Tilbury/Thurrock 26	-	-	-	-	N	N	131	128
B3	Tilbury/Thurrock 29	-	-	-	-	N	116	76	81
O1	Tilbury/Thurrock 30	-	-	-	-	N	N	93	100
O1	Tilbury/Thurrock 31	-	-	-	-	N	N	82	89
B3	Tilbury/Thurrock 32	-	-	-	-	N	195	124	N
R	Tilbury/Thurrock 33	-	-	-	-	N	134	N	N
R	Tilbury/Thurrock 34	-	-	-	-	N	96	N	N
D1	Gravesend 22	190	163	154	121	N	-	-	-
D1	Gravesend 23	-	-	-	-	-	-	112	100
B3	Strood 2	155	131	143	111	107	134	116	126
R	Kingsnorth 1	-	-	-	-	-	-	N	88
X	Kingsnorth 3	-	-	-	-	N	98	N	97
O1	Kingsnorth 4	-	-	-	-	N	N	N	80
O1	Kingsnorth 5	-	-	-	-	N	76	N	69
B3	Kingsnorth 7	-	-	-	-	N	104	N	N
X	Kingsnorth 8	-	-	-	-	N	118	N	97
B3	Kingsnorth 9	-	-	-	-	N	118	N	117
O1	Kingsnorth 10	-	-	-	-	N	86	N	81
B3	Kingsnorth 11	-	-	-	-	N	98	N	84
R	Kingsnorth 12	-	-	-	-	N	103	N	N
A1	Rocheſter 4	158	N	121	109	107	99	90	82
X	Chatham 3	N	130	144	134	109	112	155	97

SMOKE/SO₂ RATIO THAMES-SIDE WINTER

Code	Site	1962-3	63-64	64-65	65-66	66-67	67-68	68-69	69-70
microgrammes per cubic metre									
B1	Bexleyheath 1	N	.79	.54	.47	.80	.37	.43	.37
C2	Erith 1	.50	1.27	N	-	-	-	-	-
A2	Erith 3	.66	.77	N	N	.42	.35	.43	.35
C1	Erith 4	-	-	N	.49	.34	N	.24	.28
D2	Crayford 2	.34	.67	.37	.50	.55	.41	.41	.39
B3	Sidcup 3	.57	.65	.46	.44	.48	.38	.36	.30
B3	Swanley 1	.64	.81	.44	.43	.50	N	.41	.24
D2	Dartford 6	.57	N	.46	.52	.51	.43	.51	.41
X	Stone I Horns Cross	.71	.93	N	.75	.78	.61	.45	.37
B2	Swanscombe 2	-	-	-	N	N	.58	.56	.42
X	Northfleet 5	.63	.94	.50	.50	.50	.46	.49	N
B3/E	Thurrock 6	.53	.54	.47	.52	.46	.47	.51	.29
B1	Thurrock 7	.73	.93	.78	.80	.55	.68	.75	.62
D2	Thurrock 9	-	-	.70	.84	.62	.59	N	.36
B2	Tilbury/Thurrock 26	-	-	-	-	N	N	.47	.45
B3	Tilbury/Thurrock 29	-	-	-	-	N	.31	.41	.36
O1	Tilbury/Thurrock 30	-	-	-	-	N	N	.37	.32
O1	Tilbury/Thurrock 31	-	-	-	-	N	N	.43	.37
B3	Tilbury/Thurrock 32	-	-	-	-	N	.28	.35	N
R	Tilbury/Thurrock 33	-	-	-	-	N	.24	N	N
R	Tilbury/Thurrock 34	-	-	-	-	N	.27	N	N
D1	Gravesend 22	.93	1.10	.79	N	N	-	-	-
D1	Gravesend 23	-	-	-	-	-	-	.40	N
B3	Strood 2	.79	.91	.68	.69	.68	.48	.56	.41
R	Kingsnorth 1	-	-	-	-	-	-	N	.24
X	Kingsnorth 3	-	-	-	-	N	.35	N	.39
O1	Kingsnorth 4	-	-	-	-	N	N	N	.38
O1	Kingsnorth 5	-	-	-	-	N	.38	N	.39
B3	Kingsnorth 7	-	-	-	-	N	.30	N	N
X	Kingsnorth 8	-	-	-	-	N	.35	N	.37
B3	Kingsnorth 9	-	-	-	-	N	.28	N	.24
O1	Kingsnorth 10	-	-	-	-	N	.40	N	.38
B3	Kingsnorth 11	-	-	-	-	N	.39	N	.40
R	Kingsnorth 12	-	-	-	-	N	.43	N	N
A1	Rochester 4	.84	N	.82	.83	.61	.65	.74	.54
X	Chatham 3	N	1.03	.61	.62	.59	.51	.34	.53

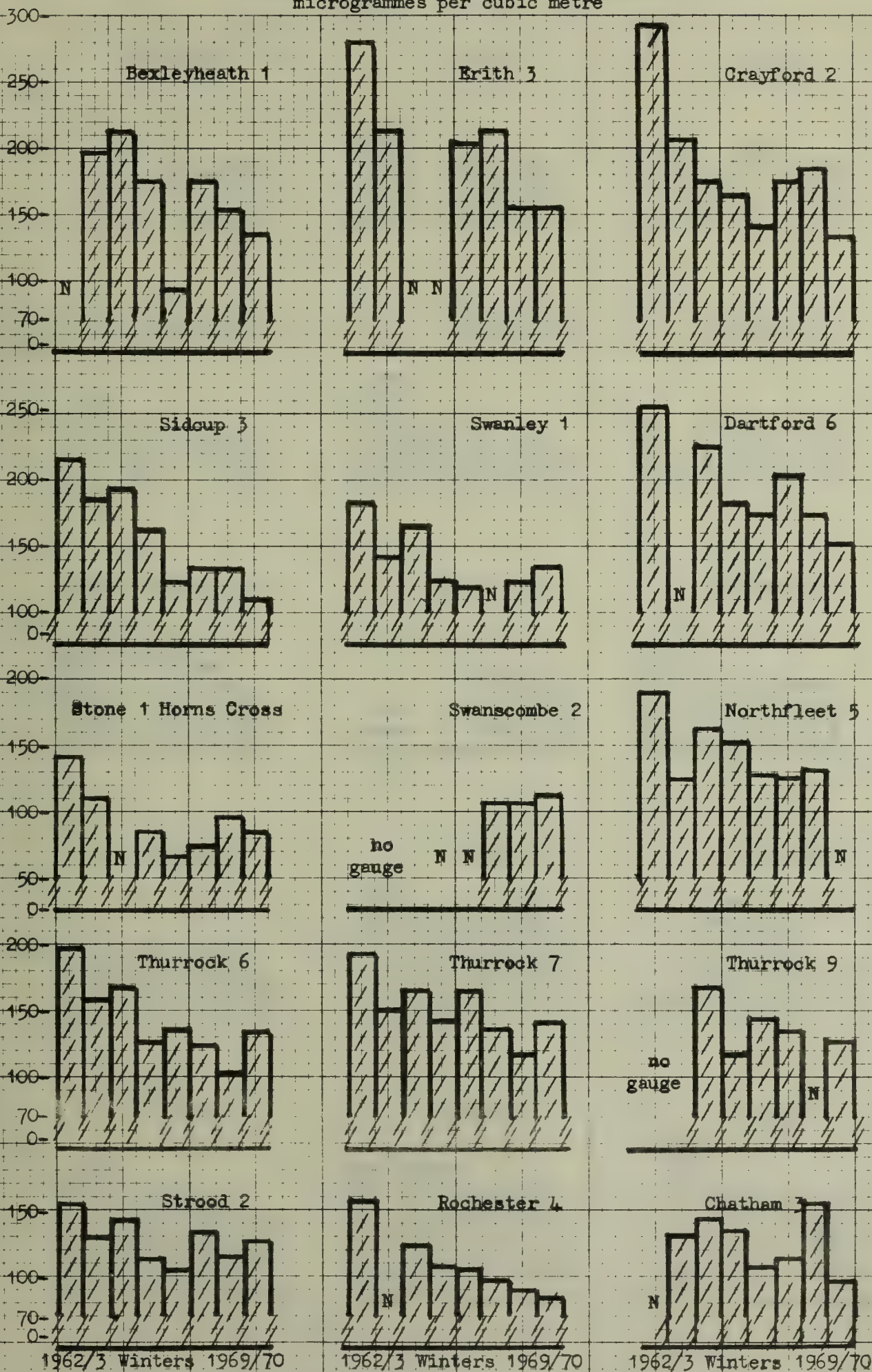
SMOKE THAMES-SIDE WINTER
microgrammes per cubic metre



Source National Survey

SULPHUR DIOXIDE THAMES-SIDE WINTER

microgrammes per cubic metre

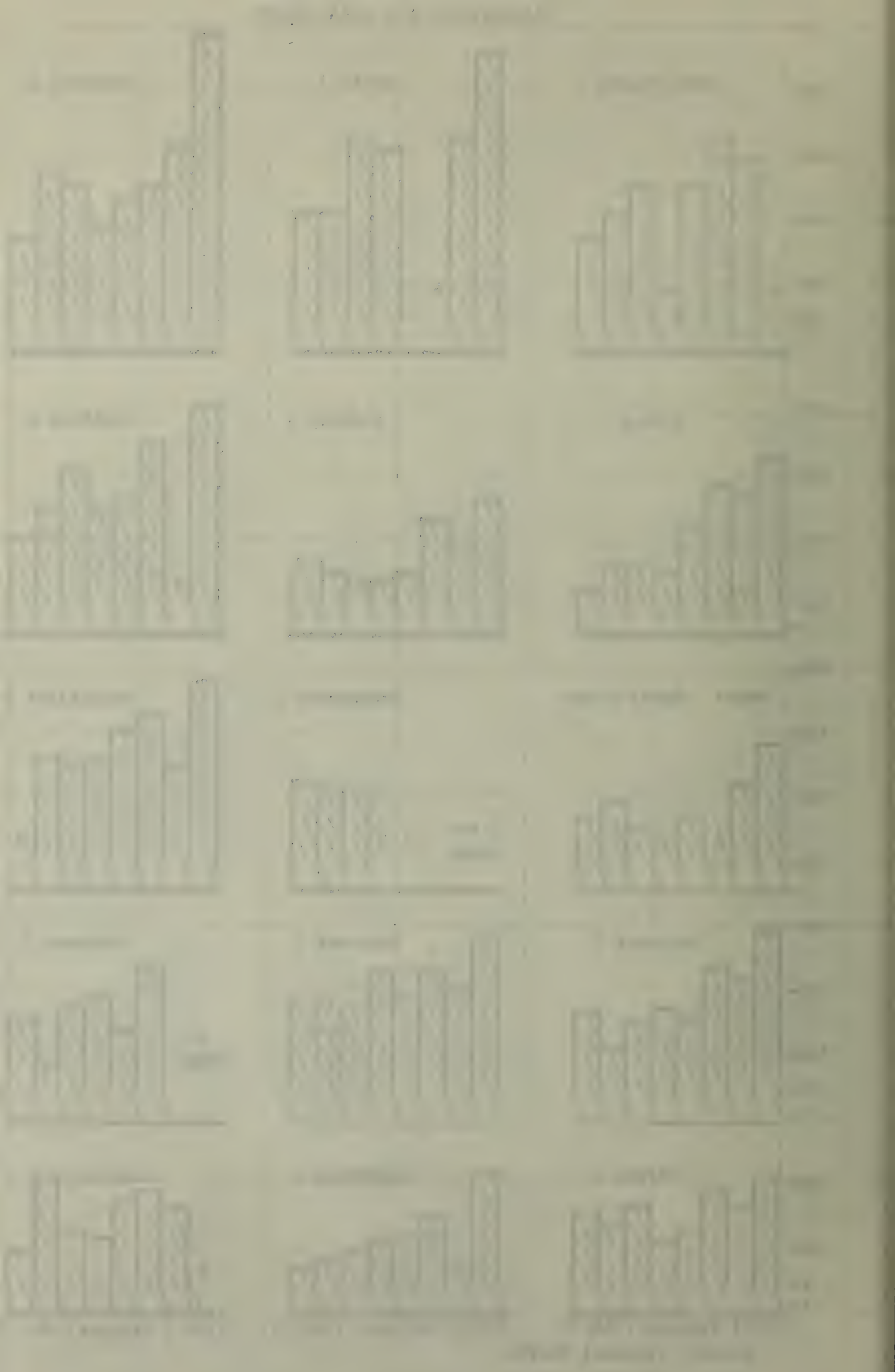


1962/3 Winters 1969/70

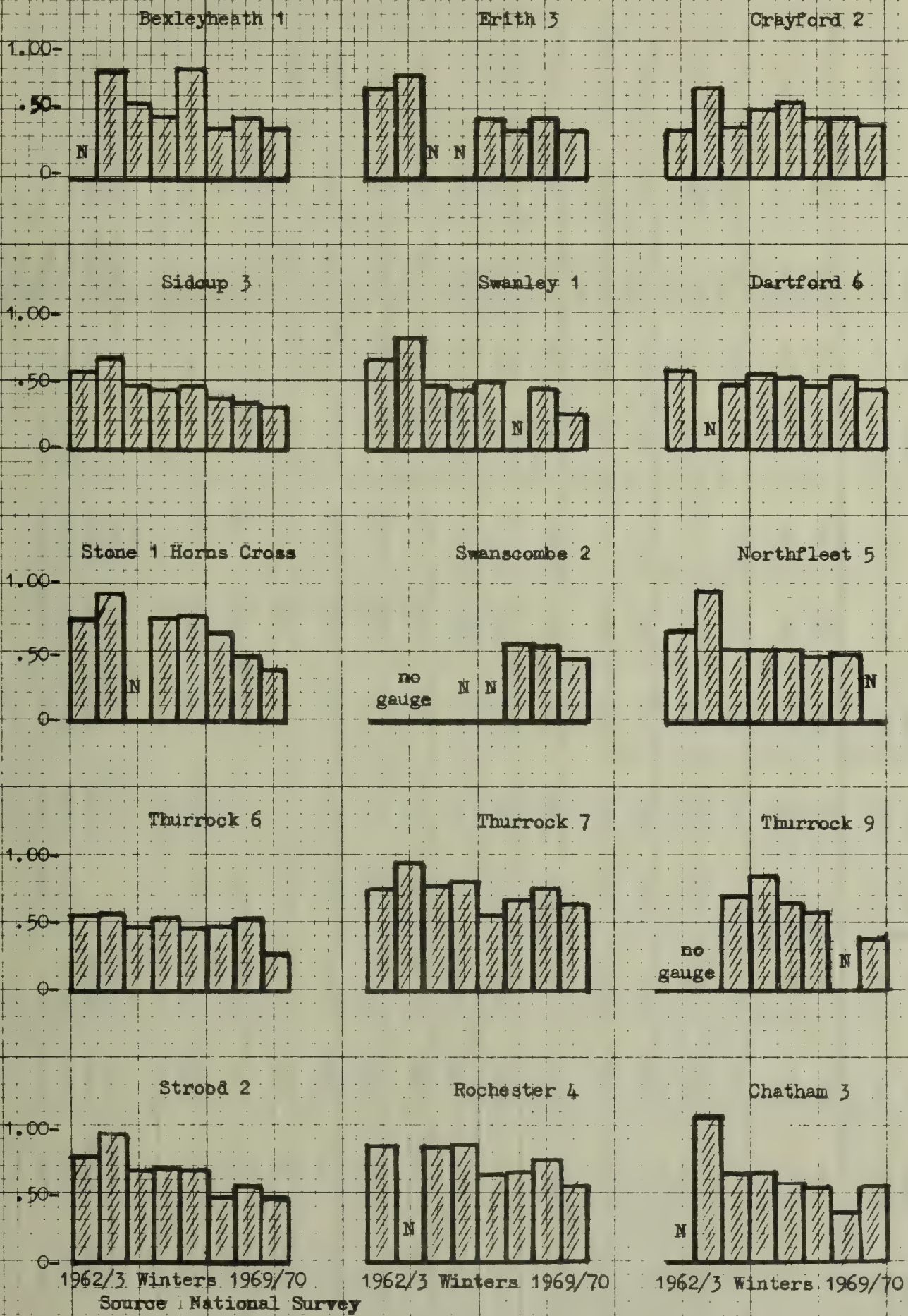
1962/3 Winters 1969/70

1962/3 Winters 1969/70

Source National Survey



SMOKE/SO₂ RATIO THAMES-SIDE WINTER
microgrammes per cubic metre



DEPOSIT GAUGE READINGS

DARTFORD CENTRAL

DARTFORD BOW ARROW

DARTFORD JOYCE GREEN

Year ending March	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust
1954-55	299	218	81	27%	0.37	283	196	87	31%	0.44					
1955-56	352	235	117	33%	0.50	400	209	191	48%	0.91					
1956-57	305 ^e	216	89	29%	0.41	294	172	122	42%	0.71	368	270	98	27%	0.36
1957-58	297	209	88	30%	0.42	374	209	165	44%	0.79	360	255	105	29%	0.41
1958-59	273	175	98	36%	0.56	353	174	179	51%	1.03	396	245	151	38%	0.62
1959-60	303	157	146	46%	0.82	451	180	271	60%	1.51	339	179	160	47%	0.89
1960-61	273	143	130	48%	0.91	385	132	253	66%	1.92	384	222	162	42%	0.73
1961-62	313	145	168	54%	1.16	406 ^c	109	297	73%	2.72	^a 363	160	^a 203	56%	1.27
1962-63	288	125	163	57%	1.30	411 ^c	106	305	74%	2.88	^h 259	164	95	37%	0.58
1963-64	263	140	123	47%	0.88	375	166	209	56%	1.26	^a 343	188	^a 155	45%	0.32
1964-65	248	175	73	29%	0.42	345	220	125	36%	0.57	262	174	88	34%	0.51
1965-66	228	160	68	30%	0.43	337	220	117	35%	0.53	278	205	73	26%	0.36
1966-67	264	179	85	32%	0.47	421 ^c	286	135	32%	0.48	^d 331	265	^d 56	17%	0.21
1967-68	260	180	80	31%	0.44	333 ^c	202	131	39%	0.64	^a 293	204	^a 88	30%	0.44
1968-69	297	171	126	42%	0.74	411 ^a	201	210	51%	1.04	^b 347	248	^b 99	29%	0.50
Total	4263	2648	1635	38%	0.62	5579	2782	2797	50%	1.00	4313	2779	1534	36%	0.54
Yearly Mean	284	177	108			372	185	187			332	214	117		

DEPOSIT GAUGE READINGS											
HORNS CROSS						SWANSCOMBE					
Year ending March	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	NORTHFLEET
1954-55	620	204	416	67%	2.04	554	235	319	58%	1.36	Total dust 448 Dust from other sources 190 Dust from cement works 258 Ratio cement works/ other dust 1.36
1955-56	685	251	434	63%	1.73	607	250	357	59%	1.43	545 220 325 60%
1956-57	578	172	406	70%	2.37	470	183	287	61%	1.57	428 161 267 63%
1957-58	643	223	420	65%	1.88	602	275	327	54%	1.19	517 236 281 54%
1958-59	573	184	389	68%	2.11	587	264	323	55%	1.22	597 325 272 46%
1959-60	678	186	492	73%	2.65	603	209	394	65%	1.83	658 224 434 66%
1960-61	^c 576	129	447	77%	3.47	^a 508	123	385	76%	3.13	448 116 332 74%
1961-62	720	116	604	84%	5.20	^c 494	102	392	79%	3.84	450 107 343 76%
1962-63	^c 729	145	584	80%	4.04	^c 456	75	381	83%	5.08	433 72 361 84%
1963-64	562	103	459	82%	4.46	470	124	346	74%	2.79	432 132 300 69%
1964-65	588	130	458	78%	3.53	493	182	311	63%	1.71	407 169 238 58%
1965-66	^d 610	264	346	57%	1.31	505	211	294	58%	1.39	418 196 222 53%
1966-67	^a 618	259	359	58%	1.37	490	174	316	65%	1.83	^c 445 221 224 50%
1967-68	590	210	380	65%	1.81	444	172	272	61%	1.59	N N N
1968-69	^a 735	274	461	63%	1.70	^f 486	204	282	58%	1.38	N N N
Total	9505	2850	6655	70%	2.34	7769	2783	4986	65%	1.68	6226 2369 3857 62%
Yearly Mean	634	190	444			517	186	333			479 183 298

LONDON FRINGE GROUP excluding SWANLEY										DARTFORD GROUP excl. SOUTHERN HOSPITAL					JOHNS CROSS SWANSCOMBE NORTHFLEET				
Year ending March	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust
1954-55											1622	629	993	61%					
1955-56											1837	721	1116	61%					
1956-57	912	740	172	19%	0.23	967	658	309	32%	0.47	1476	516	960	65%					
1957-58	934	795	139	15%	0.18	1031	673	358	35%	0.53	1762	734	1028	58%					
1958-59	920	716	204	22%	0.28	1022	594	428	42%	0.72	1757	773	984	56%					
1959-60	1026	738	288	28%	0.39	1093	516	577	53%	1.13	1939	619	1320	68%					
1960-61	929	695	234	25%	0.34	1042	497	545	52%	1.09	1532	368	1164	76%					
1961-62	1019	726	293	29%	0.40	1082	414	668	62%	1.63	1664	325	1339	80%					
1962-63	1033	722	311	30%	0.43	958	395	563	59%	1.43	1618	292	1326	82%					
1963-64	888	673	215	24%	0.32	981	494	487	50%	0.99	1464	359	1105	75%					
1964-65	856	747	109	13%	0.15	855	569	286	33%	0.50	1488	481	1007	67%					
1965-66	917	784	133	15%	0.17	843	585	258	31%	0.44	1533	671	862	56%					
1966-67	925	835	90	10%	0.11	1016	740	276	27%	0.37	1553	654	899	58%					
1967-68	895	763	132	15%	0.17	886	586	300	34%	0.51		No gauge at Northfleet							
1968-69	1022	770	252	25%	0.33	1055	620	435	41%	0.70									
Total	12276	9704	2572	21%	0.27	12831	7361	5470	42%	0.72	21245	7142	14103	67%					
Yearly Mean	944	746	198			987	566	421			1638	548	1085						

DEPOSIT GAUGE READINGS

GRAVESEND GAUGES COMBINED

GRAVESEND SWIMMING BATHS

GRAVESEND DASHWOOD

Year ending March	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust
1954-55															
1955-56															
1956-57	211	144	67	32%	0.47	202	138	64	32%	0.46	413	282	131	32%	0.47
1957-58	239	190	49	20%	0.26	239	183	56	23%	0.31	478	373	105	22%	0.28
1958-59	241	179	62	25%	0.35	233	169	64	27%	0.38	474	348	126	27%	0.36
1959-60	187	124	63	34%	0.51	219	151	68	31%	0.45	406	275	131	32%	0.48
1960-61	206	133	73	35%	0.55	227	157	70	31%	0.45	433	290	143	33%	0.49
1961-62	201	125	76	37%	0.61	214	145	69	32%	0.48	415	270	145	35%	0.54
1962-63	193	128	65	34%	0.51	^c 195	135	60	30%	0.44	388	263	125	32%	0.48
1963-64	199	144	55	28%	0.38	221	162	59	27%	0.36	420	306	114	27%	0.37
1964-65	207	164	43	21%	0.26	214	165	49	23%	0.30	421	329	92	22%	0.28
1965-66	188	148	40	21%	0.27	210	166	44	21%	0.27	398	314	84	21%	0.27
1966-67	250	211	39	16%	0.19	226	196	30	13%	0.15	476	407	69	14%	0.17
1967-68	^b 195	158	37	19%	0.23	208	181	27	13%	0.15	403	339	64	15%	0.18
1968-69	^a 277	242	35	13%	0.15	^a 204	169	35	17%	0.20	481	411	70	14%	0.15
Total	2794	2090	704	26%	0.35	2812	2117	695	25%	0.32	5606	4207	1399	25%	0.33
Yearly Mean	215	161	54			216	163	53			431	323	107		

DEPOSIT GAUGE READINGS

LONDON FRINGE GROUP excl. SWANLEY - DARTFORD GROUP excl. SOUTHERN HOSPITAL- HORNS CROSS, SWANSCOMBE, NORTHFLEET, GRAVESEND

13 GAUGES COMBINED

Year ending March	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio: cement works/ other dust	Ratio: other dust/ dust from cement wks	% dust from other sources
1956-57	3768	2196	1572	42%	0.72	1.39	58%
1957-58	4205	2575	1630	39%	0.63	1.58	61%
1958-59	4173	2431	1742	42%	0.72	1.39	58%
1959-60	4464	2148	2316	52%	1.08	0.93	48%
1960-61	3936	1850	2086	53%	1.13	0.89	47%
1961-62	4180	1735	2445	59%	1.41	0.71	41%
1962-63	3997	1672	2325	58%	1.39	0.72	42%
1963-64	3753	1832	1921	51%	1.05	0.95	49%
1964-65	3620	2126	1494	41%	0.70	1.43	59%
1965-66	3691	2354	1337	36%	0.57	1.76	64%
1966-67	3970	2636	1334	34%	0.51	1.97	66%
1956-67	43757	23565	20202	46%	0.86	1.17	54%

In the foregoing tables:

The individual gauge readings for each year are given as tons per sq.mile.

To convert to milligrams per sq metre per day, multiply the amount of deposits by - $\frac{13}{12}$

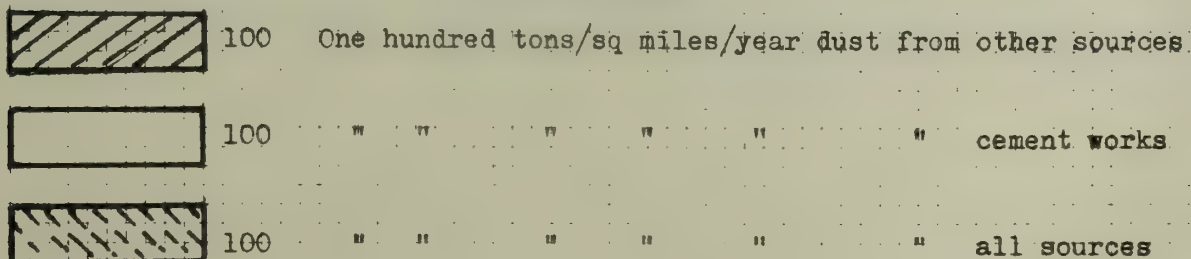
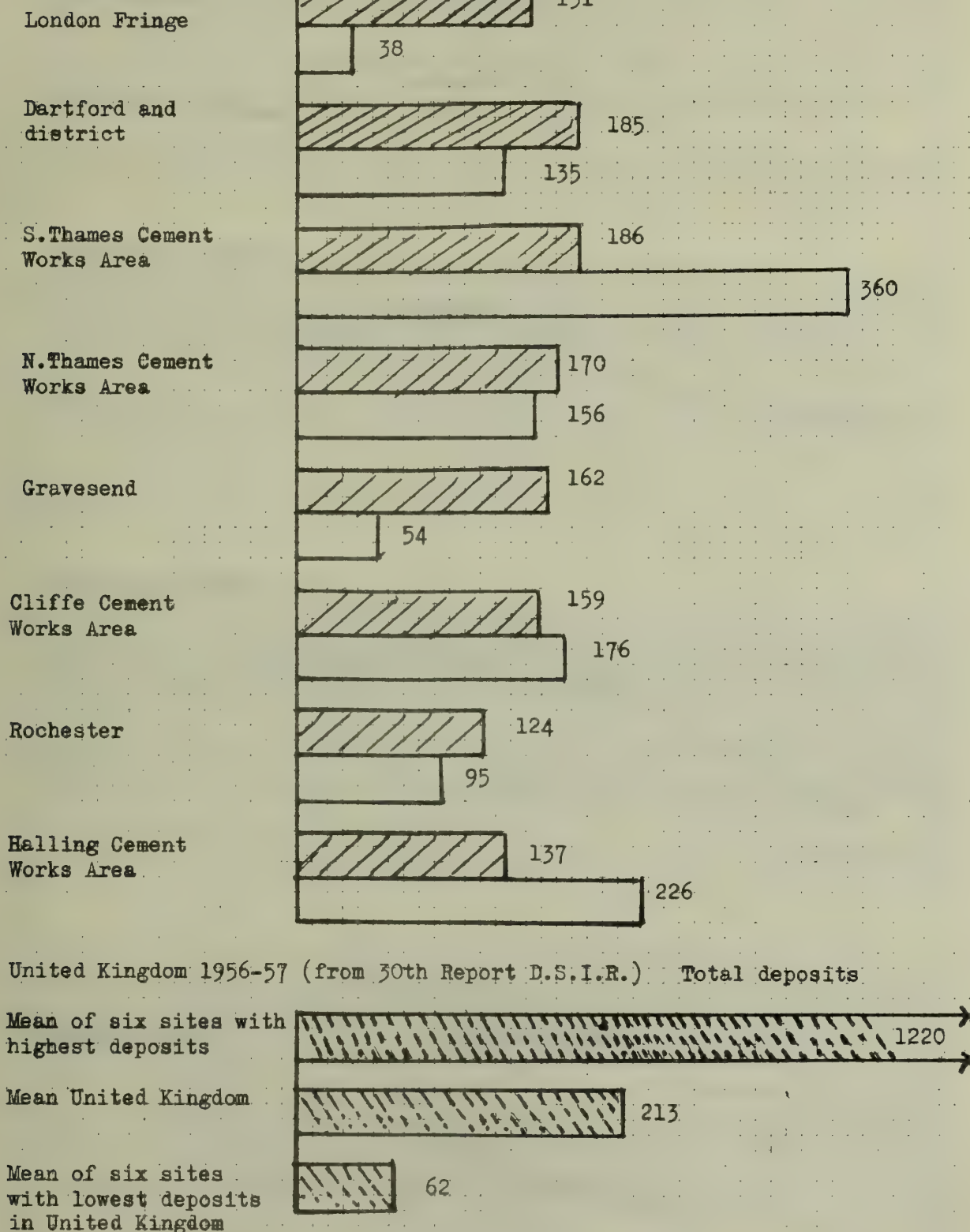
Key to abbreviations in tables:

- a Total of 6 winter months and a summer figure for 6 months estimated from 5
- b Ditto " " 4
- c Total of 6 summer months and a winter figure for 6 months estimated from 5
- d Ditto " " 4
- e A winter figure for 6 months estimated from 5 and a summer figure for 6 months estimated from 5
- f A winter figure for 6 months estimated from 4 and a summer figure for 6 months estimated from 5
- g A winter figure for 6 months estimated from 5 and a summer figure for 6 months estimated from 4
- h Contains an estimate for a half year based on 3 monthly readings.

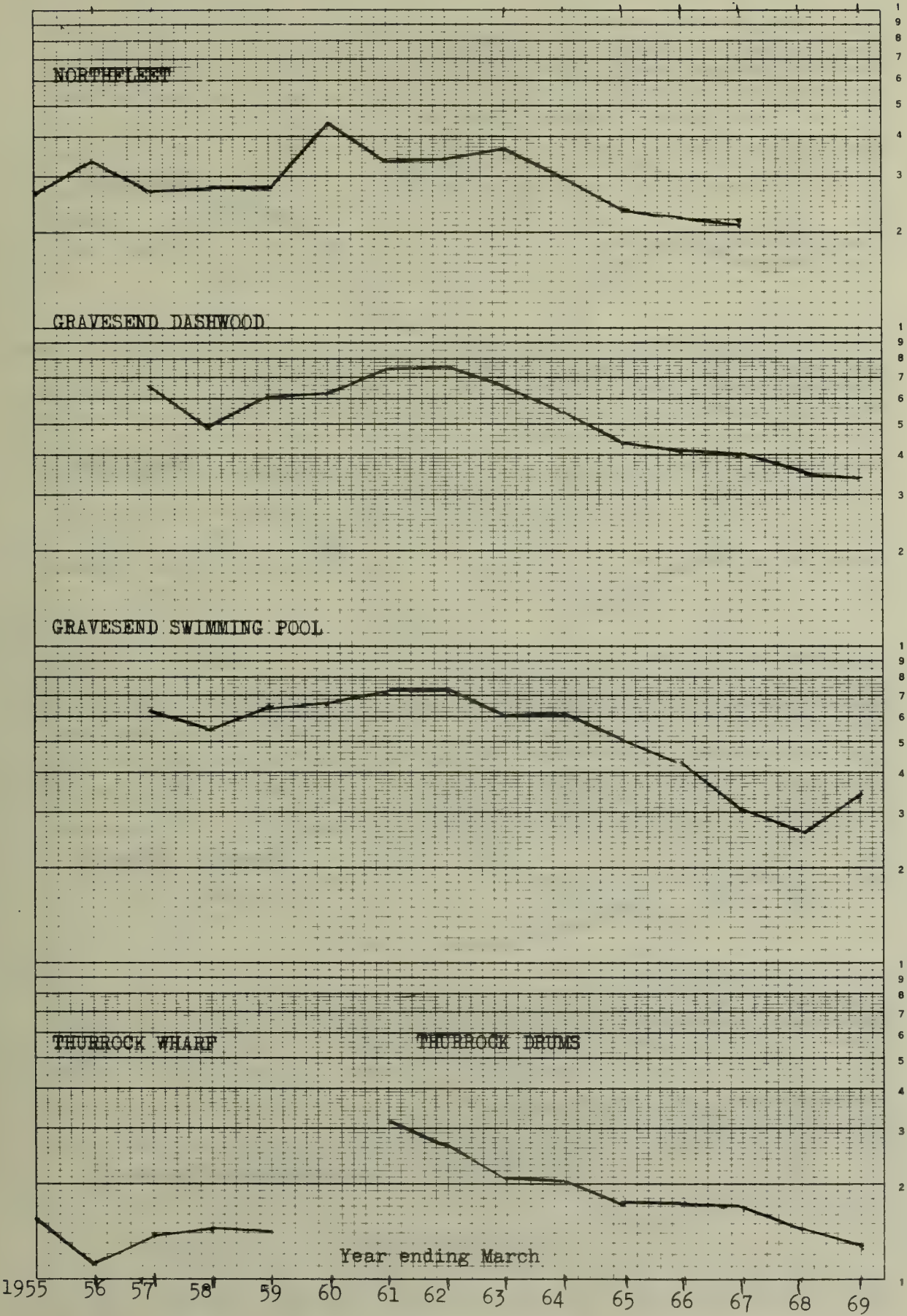
YEARLY DEPOSITS DUST TONS PER SQ.MILE Mainly 1954-69

Weighted Means of grouped gauges

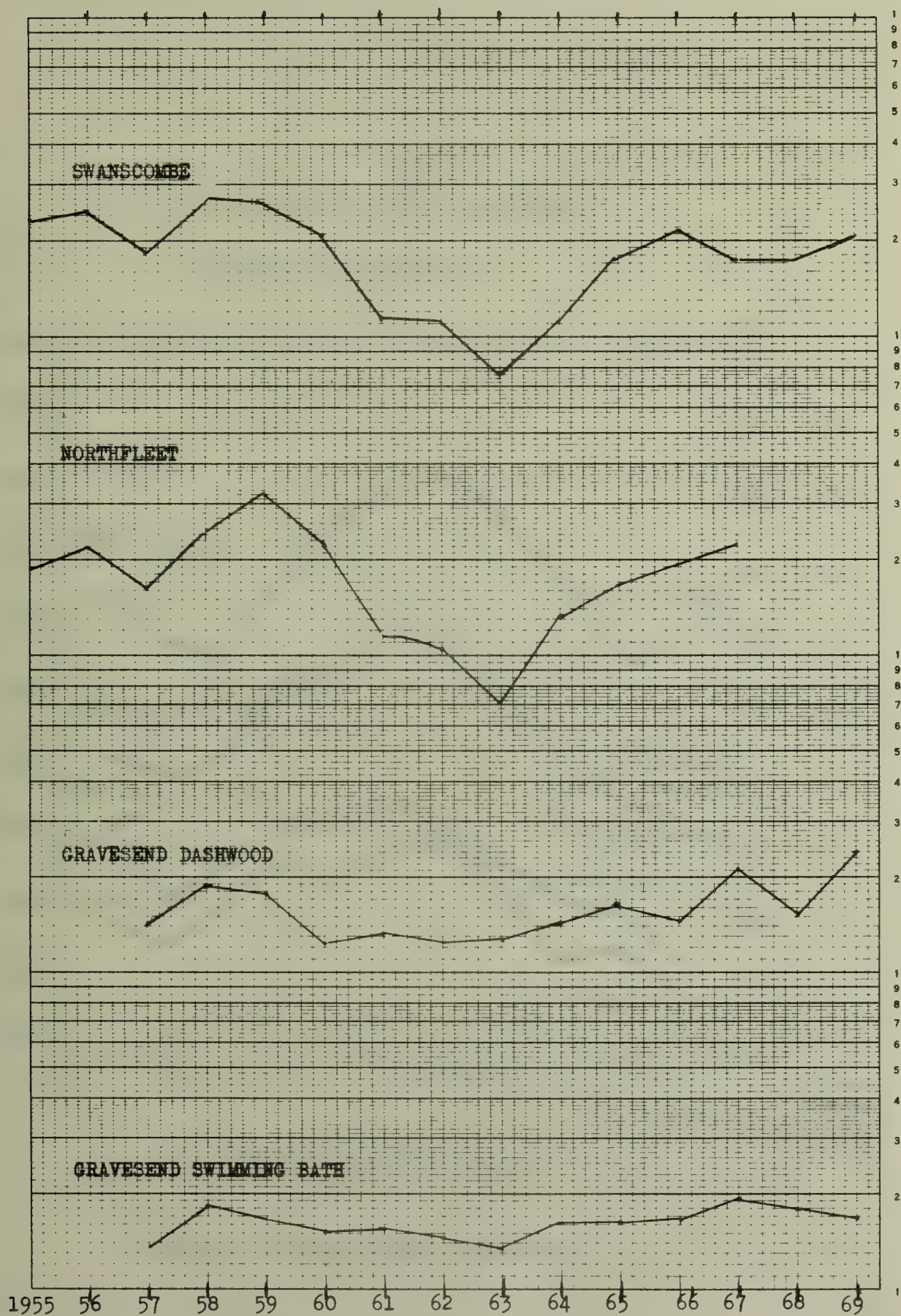
Gauges



DUST FROM CEMENT WORKS



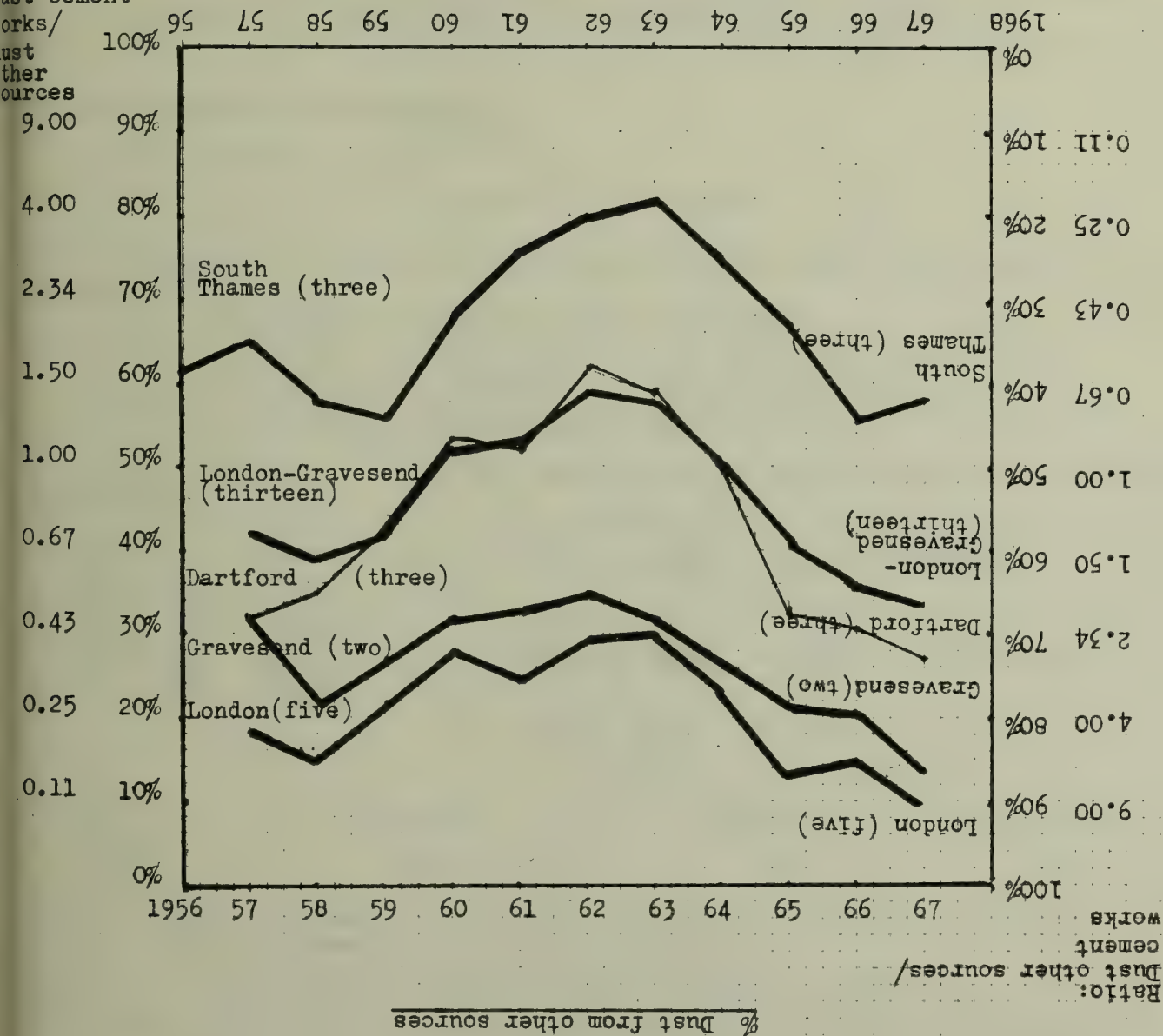
DUST FROM OTHER SOURCES



13 GAUGES - LONDON FRINGE TO GRAVESEND

% Dust from cement works

Ratio:
Dust cement
works/
Dust
other
sources



13 GAUGES - LONDON FRINGE TO GRAVESEND

% Dust from other sources

THE SIGNIFICANCE OF CHANGES IN THE AMOUNTS OF DUST DEPOSITS
STATISTICAL METHOD BY WHICH THIS HAS BEEN ESTIMATED

Let x = each individual annual deposit
n = number of annual deposits represented by mean
s.d. = standard deviation, s.e. = standard error
s.e.₅, s.e.₄, s.e.₃ = s.e. of mean of 5, 4, and 3 years observations
s.e._a and s.e._b be s.e.'s of separate means a and b.

Then:

$$s.d. = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}} \quad s.e. = \frac{s.d.}{\sqrt{n}}$$

s.e. for periods other than the one calculated

- (i) Where periods are for the same number of years the s.e. for any period is assumed as an approximation to be the same as the one calculated.
- (ii) Where the periods differ in the number of years contained
 $s.e._4 = s.e._5 \sqrt{\frac{5}{4}} = s.e._5 \times 1.1$ $s.e._3 = s.e._5 \sqrt{\frac{5}{3}} = s.e._5 \times 1.3$

s.e. of difference between means

$$s.e \text{ of difference} = \sqrt{s.e._a^2 + s.e._b^2}$$

If $s.e._a = s.e._b$ it follows that $s.e \text{ of difference} = s.e._a \sqrt{2}$

The probability with which a difference between means might be produced by chance is obtained by:

- (i) dividing the difference by s.e of difference
- (ii) applying the resultant factor to the relevant line of the "t" distribution table using the 8th line for comparison of two five year periods (5-1) + (5-1) the 6th line for a comparison of a five year period with a three year period (5-1) + (3-1)

The calculations for dust from cement works in the Northfleet gauge provide an illustration.

x	x ²		
1960	434	188400	$s.d = \sqrt{\frac{636500 - \frac{1770^2}{5}}{5-1}} = \sqrt{\frac{636500 - \frac{3133000}{5}}{4}} = \sqrt{\frac{9900}{4}} = \sqrt{2475} = 49.75$ $s.e_5 = \frac{49.75}{\sqrt{5}} = 22.2$
1961	332	110200	
1962	343	117600	
1963	361	130300	
1964	300	90000	
	1770	636500	

Mean of yearly deposits	1955-59	1960-64	1965-67
	280	354	228

s.e for 1960-65 5 year mean i.e. 22.2 is applicable to 1955-59 5 year mean.
s.e for 1965-67 3 year mean = 22.2 x 1.3 = 28.8
s.e for difference between means of 1955-59 and 1960-64 = $22.2 \sqrt{2} = 31.4$
s.e for difference between means of 1960-64 and 1965-67 = $\sqrt{22.2^2 + 28.8^2} = 36.4$
Difference between means of 1955-59 and 1960-64 = +74 difference ÷ s.e diff. = 74/31.4 = 2.36. Apply factor 2.36 to line 8 of "t" distribution table and probability of around .05 is given.
Difference between means of 1960-64 and 1965-67 = 126. Difference ÷ s.e difference = $\frac{126}{36.4} = 3.45$. Apply factor 3.45 to line 6 of "t" distribution table and probability of around .01 is given.

TOTAL DUST

Site of gauge	Period*	Mean Annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. $\frac{1}{2}$ by S.E. of diff.	Probability with which chance could produce the difference
SWANLEY	1961-64 (4 yrs)	161		10.9)			
	1965-69	186	+25	9.9)	14.7	1.70	.1
SIDCUP	1957-59 (3 yrs)	140		8.9)			
Black Fen	1960-64	158	+18	6.8))	11.2	1.61	.2
	1965-69	164	-14	6.8)	9.6	1.46	.2
SIDCUP	1955-59	153		7.0)			
Royal Pk	1960-64	160	+7	7.0))	9.9	0.71	.5
	1965-69	146	-14	7.0)	9.9	1.42	.2
BEXLEY	1955-59	187		8.4)			
	1960-64	172	-15	8.4))	11.9	1.26	.2
	1965-69	178	+6	8.4)	11.9	0.50	.6
ERITH	1955-59	202		6.3)			
	1960-64	199	-3	6.3))	8.9	.34	.7
	1965-69	212	+13	6.3)	8.9	1.46	.2
CRAYFORD	1955-59	253		11.2)			
	1960-64	288	+35	11.2))	15.8	2.22	.05
	1965-69	223	-65	11.2)	15.8	4.12	.01
DARTFORD	1955-59	305		11.7)			
Central	1960-64	288	-17	11.7))	16.5	1.03	.3
	1965-69	259	-29	11.7)	16.5	1.76	.1
DARTFORD	1955-59	340		18.9)			
Bow Arrow	1960-64	405	+65	18.9))	25.9	2.52	.05
	1965-69	369	-36	18.9)	25.9	1.39	.2
DARTFORD	1957-59 (3 yrs)	375		21.0)			
Joyce Green	1960-64	337	-38	16.1))	26.5	1.43	.2
	1965-69	302	-35	16.1)	22.8	1.54	.2
HORNS CROSS	1955-59	620		27.2)			
	1960-64	653	+33	27.2))	38.4	0.86	.4
	1965-69	628	-25	27.2)	38.4	0.65	.5
SWANSCOMBE	1955-59	564		10.0)			
	1960-64	506	-58	10.0))	14.2	4.08	.01
	1965-69	483	+23	10.0)	14.2	1.64	.2
NORTHFLEET	1955-59	507		43.7)			
	1960-64	484	-23	43.7))	61.9	0.37	.7
	1965-69	423	+61	56.9)	71.8	0.85	.4
THURROCK	1955-59	357		9.8)			
Ward Ave.	1960-64	318	-39	9.8))	13.9	2.80	.02
	1965-69	349	+31	9.8)	13.9	2.23	.05
GRAVESEND	1957-59 (3 yrs)	230		22.4)			
Dashwood	1960-64	197	-33	17.2))	28.2	1.17	.3
	1965-59	223	+26	17.2)	24.4	1.06	.3
GRAVESEND	1957-59 (3 yrs)	224		4.6)			
Swimming	1960-64	215	-9	3.6))	5.8	1.60	.2
Pool	1965-69	212	-3	3.6)	5.1	0.58	.6

TOTAL DUST (continued)

Site of gauge	Period*	Mean Annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. by S.E. of diff.	Probability with which chance could produce the difference
CLIFFE	1957-59 (3yrs)	292		7.3)			
	1960-64	363	+71	5.6))	9.2	7.74	<u>.001</u>
	1965-69	355	- 8	5.6)	7.9	1.14	<u>.3</u>
STROOD	1957-59(3 yrs)	219		12.7)			
CEMETERY	1960-64	218	- 1	9.8))	16.0	0.06	.9
	1965-69	220	+ 2	9.8)	13.9	0.14	.9
FORT	1957-59(3 yrs)	199		9.5)			
PITT	1960-64	189	-10	7.3))	12.0	0.83	.4
	1965-69	185	- 4	7.3)	10.5	0.39	.7
FRINDSBURY	1957-59(3 yrs)	220		24.1)			
	1960-64	214	- 6	18.8))	30.6	0.20	.8
	1965-69	240	+26	18.8)	26.6	0.98	.4
N.HALLING	1957-59 (3 yrs)	413		42.3)			
	1960-64	547	+34	32.5))	16.9	2.0	.1
	1965-69	480	-67	32.5)	46.0	1.5	<u>.2</u>

DUST FROM CEMENT WORKS

SWANLEY	1961-64 (4 yrs)	39		6.7)			
	1964-65	25	-14	6.0)	9.0	1.56	.2
SIDCUP	1957-59 (3 yrs)	23		5.6)			
Black	1960-64	36	+13	4.3))	7.1	1.86	.1
Fen	1965-69	15	-21	4.3)	6.1	3.45	<u>.01</u>
SIDCUP	1955-59	27		6.2)			
Royal Pk	1960-64	43	+16	6.2))	8.8	1.84	.1
	1965-69	24	-19	6.2)	8.8	2.16	<u>.05</u>
BEXLEY	1955-59	28		4.0)			
	1960-64	42	+14	4.0))	5.7	2.46	<u>.05</u>
	1965-69	28	-18	4.0)	5.7	3.16	<u>.02</u>
ERITH	1955-59	38		3.4)			
	1960-64	46	+ 8	3.4))	4.8	1.67	.1
	1965-69	27	-19	3.4)	4.8	3.96	<u>.01</u>
CRAYFORD	1955-59	51		18.4)			
	1960-64	99	+48	18.4))	26.0	1.84	.1
	1965-69	48	-51	18.4)	26.0	1.96	.1
DARTFORD	1955-59	94		10.3)			
Central	1960-64	146	+52	10.3))	14.6	3.56	<u>.01</u>
	1965-59	86	-60	10.3)	14.6	4.11	<u>.01</u>
DARTFORD	1955-59	148		16.9)			
Bow Arrow	1960-64	267	+119	16.9))	24.0	4.96	<u>.001</u>
	1965-69	143	-124	16.9)	24.0	5.18	<u>.001</u>
DARTFORD	1957-59 (3 yrs)	118		9.7)			
Joyce	1960-64	155	+37	7.5))	12.3	3.01	<u>.02</u>
Green	1965-69	80	-75	7.5)	12.3	6.10	<u>.001</u>

DUST FROM CEMENT WORKS (continued)

Site of gauge	Period*	Mean annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. $\pm$ by S.E. of diff.	Probability with which chance could produce the difference
HORNS CROSS	1955-59	413		24.5)			
	1960-64	517	+ 104	24.5))	34.5	3.02	<u>.02</u>
	1965-69	401	- 116	24.5)	34.5	3.36	<u>.01</u>
SWANSCOMBE	1955-59	322		8.7)			
	1960-64	379	+ 57	8.7))	12.3	4.62	<u>.01</u>
	1965-69	295	- 84	8.7)	12.3	6.80	<u>.001</u>
NORHTFLEET	1955-59	280		22.2)			
	1960-64	354	+ 74	22.2))	31.4	2.36	<u>.05</u>
	1965-67 (3 yrs)	228	- 126	28.8)	36.4	3.45	<u>.01</u>
THURROCK Ward Ave.	1955-59	165		11.8)			
	1960-64	202	+ 37	11.8))	16.7	2.21	<u>.05</u>
	1965-69	179	- 23	11.8)	16.7	1.38	<u>.2</u>
GRAVESEND Dashwood	1957-59 (3 yrs)	59		1.7)			
	1960-64	66	+ 7	1.3))	2.14	3.27	<u>.02</u>
	1965-69	38	- 28	1.3)	1.84	15.4	<u>.001</u>
GRAVESEND Swimming Pool	1957-59 (3 yrs)	61		5.5)			
	1960-64	65	+ 4	4.2))	6.86	5.82	<u>.001</u>
	1965-69	37	- 28	4.2)	6.0	4.70	<u>.001</u>
CLIFFE	1957-59 (3 yrs)	122		65.5)			
	1960-64	191	+ 69	50.5))	82.7	.83	.4
	1965-69	191	--	50.5)	71.5	0.00	1.0
STROOD CEMETERY	1957-59 (3 yrs)	95		13.1)			
	1960-64	116	+ 21	10.1))	16.5	1.27	.3
	1965-69	105	- 11	10.1)	14.3	.77	.5
FOR PITT	1957-59 (3 yrs)	73		6.1)			
	1960-64	77	+ 4	4.7))	7.70	.52	.6
	1965-69	56	- 21	4.7)	6.65	3.15	<u>.02</u>
FRINDSBURY	1957-59 (3 yrs)	76		22.1)			
	1960-64	92	+ 16	17.0))	27.9	.57	.6
	1965-69	108	+ 16	17.0)	24.1	.66	.5
N. HALLING	1957-59 (3 yrs)	292		31.8)			
	1960-64	425	+ 133	24.5))	40.1	3.31	<u>.02</u>
	1965-69	295	-130	24.5)	33.6	3.87	<u>.01</u>

DUST FROM OTHER SOURCES

SWANLEY	1961-64 (4 yrs)	122		12.5)			
	1965-59	161	+ 39	11.3))	16.9	2.3	<u>.05</u>
SIDCUP Black Fen	1957-59 (3 yrs)	116		7.4)			
	1960-64	121	+ 5	5.7))	9.3	0.54	<u>.06</u>
	1965-69	148	+ 27	5.7)	8.1	3.33	<u>.02</u>

DUST FROM OTHER SOURCES (continued)

Site of gauge	Period*	Mean annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff $\frac{\pm}{\text{S.E.}}$ by S.E. of diff.	Probability with which chance could produce the difference
SIDCUP	1955-59	125		6.8)			
Royal Pk	1960-64	117	- 8	6.8))	9.6	0.83	.4
	1965-69	121	+ 4	6.8)	9.6	0.42	.7
BEXLEY	1955-59	158		5.2)			
	1960-64	129	- 29	5.2))	7.4	3.94	<u>.01</u>
	1965-69	150	+ 21	5.2)	7.4	2.85	<u>.05</u>
ERITH	1955-59	164		7.3)			
	1960-64	153	- 11	7.3))	10.4	1.05	.3
	1965-69	184	+ 31	7.3)	10.4	2.97	<u>.05</u>
CRAYFORD	1955-59	201		5.6)			
	1960-64	189	- 12	5.6))	7.9	1.52	.2
	1965-69	176	- 13	5.6)	7.9	1.64	.2
DARTFORD Central	1955-59	210		3.7)			
	1960-64	142	- 68	3.7))	5.3	12.95	<u>.001</u>
	1965-69	173	+ 31	3.7)	5.3	5.90	<u>.001</u>
DARTFORD Bow Arrow	1955-59	192		15.5)			
	1960-64	138	- 54	15.5))	22.0	2.46	<u>.05</u>
	1965-69	225	+ 87	15.5)	22.0	3.96	<u>.01</u>
DARTFORD Joyce Green	1957-59 (3 yrs)	257		21.5)			
	1960-64	182	- 75	16.5))	27.1	2.78	<u>.05</u>
	1965-69	219	+ 37	16.5)	23.4	1.58	.2
HORNS CROSS	1955-59	207		26.8)			
	1960-64	136	- 71	26.8))	37.8	1.88	.1
	1965-69	227	+ 91	26.8)	37.8	2.41	<u>.05</u>
SWANSCOMBE	1955-59	241		8.0)			
	1960-64	126	-115	8.0))	11.3	10.2	<u>.001</u>
	1965-69	188	+ 62	8.0)	11.3	5.3	<u>.001</u>
NORTHFLEET	1955-59	226		25.4)			
	1960-64	130	- 96	25.4))	35.9	2.68	<u>.05</u>
	1965-67 (3 yrs)	195	+ 65	25.4)	41.7	1.56	.2
THURROCK Ward Ave.	1955-59	182		12.0)			
	1960-64	116	- 66	12.0))	17.0	3.8	<u>.01</u>
	1965-69	170	+ 54	12.0)	17.0	3.2	<u>.02</u>
GRAVESEND Dashwood	1957-59 (3 yrs)	171		24.3)			
	1960-64	130		18.7))	30.7	1.3	.2
	1965-69	184	+ 54	18.7)	26.5	2.0	.1
GRAVESEND Swimming Pool	1957-59 (3 yrs)	163		7.6)			
	1960-64	150	- 13	6.0))	9.8	1.3	.2
	1965-69	175	+ 25	6.0)	8.5	2.9	<u>.05</u>
CLIFFE	1957-59 (3 yrs)	169		13.9)			
	1960-64	148	- 21	10.7))	17.5	1.2	.3
	1965-69	163	+ 15	10.7)	13.9	1.1	.3

DUST FROM OTHER SOURCES (continued)

Site of gauge	Period*	Mean annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. $\frac{s}{t}$ by S.E. of diff.	Probability with which chance could produce the difference
STROOD	1957-59 (3 yrs)	124		5.9)			
CEMETERY	1960-64	102	- 22	4.5))	7.3	3.0	<u>.02</u>
	1965-69	125	+ 23	4.5)	6.4	3.6	<u>.02</u>
FORT PITT	1957-59 (3 yrs)	122		13.5)			
	1960-64	111	- 11	10.4))	17.0	0.7	.5
	1965-69	129	+ 18	10.4)	14.7	1.2	.3
FRINDSBURY	1957-59 (3 yrs)	144		5.3)			
	1960-64	122	- 22	4.1))	6.7	3.3	<u>.02</u>
	1965-69	131	+ 9	4.1)	5.3	1.7	<u>.2</u>
N. HALLING	1957-59 (3 yrs)	120		15.4)			
	1960-64	122	+ 2	11.9))	19.6	0.1	.9
	1965-69	185	+ 65	11.9)	16.8	3.8	<u>.01</u>

SUMMATED READINGS OF GROUPS OF GAUGES

Sites of gauges in group	Period	Mean annual summated reading	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. ± by S.E. of diff.	Probability for chance to produce difference
<u>TOTAL DUST</u>							
SIDCUP(2)	1957-59(3 yrs)	922		36.6)	46.3	1.15	.3
BEXLEY, ERITH)	1960-64	975	+ 53	28.3))			
CRAYFORD	1965-69	923	- 52	28.3)	40.0	1.30	.2
DARTFORD Ce	1957-59(3 yrs)	1006		52.0)			
DARTFORD B.A)	1960-64	1031	+ 25	44.0))	68.1	0.36	.7
DARTFORD J.C)	1965-69	931	-100	44.0)	62.2	1.61	.2
HORNS CROSS	1955-59	1690		82.0)			
SWANCOMBE	1960-64	1643	- 47	82.0))	115.8	0.41	.7
NORTHFLEET	1965-67 (3 yrs)	1191	-452	106.6)	134.5	3.37	.02
GRAVESEND	1957-59(3 yrs)	455		23.3)			
Dashwood &	1960-64	412	- 43	17.9))	29.4	1.47	.2
S.Pool	1965-69	435	+ 23	17.9)	25.3	0.91	.4
STROOD CEM	1957-59(3 yrs)	639		66.3)			
FORT PITT	1960-64	622	- 17	51.0))	83.7	0.20	.8
FRINDSBURY	1965-69	725	+103	51.0)	72.0	1.43	.2
<u>DUST FROM CEMENT WORKS</u>							
SIDCUP (2)	1957-59(3 yrs)	171		36.8)			
BEXLEY, ERITH)	1960-64	268	+ 97	28.3))	46.4	2.10	.1
CRAYFORD	1965-69	143	-125	28.3)	40.1	3.12	.01
DARTFORD Ce	1957-59(3 yrs)	365		41.2)			
DARTFORD B.A)	1960-64	568	+203	31.7))	51.9	3.92	.01
DARTFORD J.C)	1965-69	311	-257	31.7)	45.0	5.72	.001
HORNS CROSS	1955-59	1016		48.4)			
SWANSCOMBE	1960-64	1250	+234	48.4))	68.4	3.43	.01
NORTHFLEET	1965-67	922	-328	62.3)	78.9	4.17	.01
GRAVESEND	1957-59(3 yrs)	120		6.85)			
Dashwood &	1960-64	131	+ 11	5.26))	8.64	1.28	.3
S.Pool	1965-69	75	- 56	5.26)	7.45	7.52	.001
FRINDSBURY	1957-59(3 yrs)	248		39.4)			
STROOD	1960-64	287	+ 39	30.3))	49.7	0.79	.5
FORT PITT	1965-69	270	- 17	30.3)	44.7	0.38	.7
<u>DUST FROM SOURCES OTHER THAN CEMENT WORKS</u>							
SIDCUP (2)	1957-59(3 yrs)	750		20.5)			
BEXLEY, ERITH)	1960-64	710	- 40	15.8))	25.9	1.55	.2
CRAYFORD	1965-69	779	+ 69	15.8)	22.3	3.09	.02
DARTFORD CEN)	1957-59(3 yrs)	641		40.6)			
DARTFORD B.A)	1960-64	463	-178	31.3))	51.3	3.47	.01
DARTFORD J.C)	1965-69	620	+157	31.3)	44.1	3.55	.01
HORNS CROSS	1955-59	674		58.2)			
SWANSCOMBE	1960-64	392	-282	58.2))	82.3	3.43	.01
NORTHFLEET	1965-67(3 yrs)	602	+210	75.7)	95.5	2.20	.05
GRAVESEND	1957-59(3 yrs)	334		26.4)			
Dashwood &	1960-64	280	- 54	20.3))	33.3	1.64	.2
S.Pool	1965-69	360	+ 80	20.3)	28.8	2.79	.02
STROOD CEM	1957-59(3yrs)	391		18.6)			
FORT PITT	1960-64	335	- 56	14.4))	23.6	2.38	.05
FRINDSBURY	1965-69	375	+ 40	14.4)	20.3	1.97	.1

